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P R E F A C E .

THE Editor has again to record his thanks to those who have contributed to the continued success of the Magazine, whether as contributors of articles or notes, or as supporters and readers of the journal.

He would venture to suggest that in certain parts of the field which the journal occupies, he would be glad to have more contributions for insertion in the future than 'The Naturalist' has been favoured with during the year now drawing to a close. And he might remind all supporters that the complexion which the journal assumes depends far more upon his supporters than upon himself, and that, therefore, should any one desire to see any particular department of natural history or any particular county in the north of England more adequately catered for, the remedy lies to some extent in his own hands. Let such a one forward articles or notes bearing thereupon, and he will find that he will have the ready assistance of the Editor in the matter.

One more request. Short notes of important and interesting occurrences are the life-blood of such journals. Will all readers therefore furnish such brief notices whenever suitable topics come under their observation?

THE NATURALIST

For 1893.

NORWEGIAN BOULDERS IN HOLDERNESS.

ALFRED HARKER, M.A., F.G.S.

THE geologist whose lot is cast in East Yorkshire has no opportunity of examining igneous and crystalline rocks in place without making somewhat extended excursions. As a compensation for this, however, he has close to hand, in the boulders of the Holderness Boulder-Clays, specimens of many rocks of unique interest easily collected and studied. These are the spoils of the great Norwegian ice-sheet which, during the maximum glaciation of the region, crossed the North Sea, grounded in face of the chalk cliffs of Speeton, invaded the then bay of Holderness, and mingled its burden of foreign material with that brought by native ice from the English uplands. The boulders from Norway may be collected from the clays, especially the Basement-Clay of Dimlington and Bridlington, or from the beach south of Flamborough Head. They have been recorded by the officers of the Geological Survey, by Mr. Lamplugh and the present writer, and by various local workers. Many of them are of such characters as to be distinguished at a glance from all rocks of local origin, or from the igneous rocks transported from Teesdale, the Cheviots, or the Lake district. Two or three leading types are worthy of brief remark.

(I.) *Augite-Syenites*.—After the close of the Silurian period there were intruded among the Silurian strata of southern Norway a group of crystalline igneous rocks of peculiar types. Chemically they are remarkable for their richness in soda, and the mineralogical and structural characters of some of them distinguish them, in the eyes of the petrologist, from the rocks of all other districts. One marked type, largely developed in the coast-stretch between Christiania and Langesundstjord, is a variety of augite-syenite which Brögger has named *laurvikite*, from the town Laurvig. Boulders of this rock are not difficult to find on the Holderness coast. It is rather coarsely crystalline, and presents a handsome appearance on a broken surface from the broad cleavage-faces of the feldspars, the lustrous black augite, and the occasional flakes of dark or golden-brown mica. The feldspars are often grey or dark in colour, and some-

times show a beautiful iridescence on their planes. This, with the rather coarse texture of the rock and the tendency of the augite to assume a diallagic appearance, points to deep-seated consolidation of the rock-mass from which our boulders are derived. A microscopic examination of thin slices of the rock reveals some interesting features, especially the curious intergrowths of different kinds of felspar to form composite crystals.

(II.) *Rhomb-porphyr*ies.—Another type of rock associated in its home with the preceding, and also recognisable as boulders in Holderness and Norfolk, is that which Norwegian geologists have long known under the name *Rhombenporphyr*. Its distinguishing feature is the occurrence of abundant porphyritic crystals of a felspar crystallised with an unusual habit, such that its outlines, as seen, for instance, upon the smooth surface of a boulder, have often the form of a rhomb. The crystals may be sharp-angled or rather rounded at the edges, and they frequently show irregular patches in their interior of different material, as if affected by corrosive action. They usually have a dark-grey colour. The fine-grained ground-mass in which these crystals are embedded is of a paler grey colour with a violet tone, but, when more weathered, it often assumes a reddish tint. It is chiefly felspathic, but a microscopic examination discovers other minerals, such as augite, apatite, and little flakes of dark mica.

(III.) *Saussurite-Gabbros*.—These rocks belong to another set of post-Silurian intrusions, found in western Norway and especially in the district around Bergen. They present considerable variations in appearance, but, speaking generally, they are evidently crystalline rocks of moderately fine to rather coarse texture, and in hand-specimens show little more than dark green hornblende set in a dull white felspathic-looking substance. This latter is partly decomposing felspar, never showing the bright cleavage-planes of the minerals in the augite-syenites, partly the minutely granular material rather vaguely denominated 'saussurite.' By Reusch and other workers in Norway the rocks are conveniently termed saussurite-gabbros: the great alterations they have certainly undergone render their original character a matter of some doubt. The so-called saussurite is an aggregate of albite, epidote, zoisite, actinolite, etc., often requiring very thin slices and high magnifying powers to resolve it; for the most part it must be formed by the destruction of a lime-soda-felspar. The patches of hornblende are no doubt in great measure secondary too, and this is indicated in hand-specimens by their green colour and frequent fibrous structure. Several boulders of saussurite-gabbros have been collected from the beach between Bridlington and Flamborough.

(IV.) *Granites*.—Among the granites we find less strongly distinctive features to warrant identification of the specimens with particular masses in situ; still there can be no doubt that the great majority of the granite boulders in the Holderness clays must be referred to Norwegian sources. The only British granites that we should naturally expect in this connection are those of Shap Fell and of the Cheviots; the former and apparently one variety at least of the latter can be recognised, but the greater number of the specimens belong to types widely different. Many are grey granites with brown mica (biotite) as a characteristic mineral; others, often of greenish grey colour, show both brown and silvery white micas. These rocks are of medium to fine texture. In thin slices they show bending of the micas and feldspars and disturbance of the optical properties of the quartz, causing it to give only incomplete extinctions when rotated between crossed Nicol's prisms. These are well-known effects of the stresses which accompany great crust-movements, and the granites in question doubtless formed part of the gneissic areas of southern and western Norway. We also find among the boulders a red granite of coarser grain than the preceding, consisting essentially of flesh-coloured feldspar with a smaller proportion of grey quartz and a little brown mica. The microscope shows that the feldspars are mostly microcline and microperthite; the evidences of violent mechanical disturbance seen in the other granites are here wanting. This type of rock may be referred with considerable probability to the district west of Christiania, where similar granites occur in intrusive masses of rather later date than the augite-syenites and rhomb-porphyrines.

(V.) *Gneisses and crystalline schists*.—Rocks belonging to these divisions are found among our boulders in great variety, and there can be no doubt as to their Scandinavian origin, but we have not enough information respecting the great development of crystalline rocks in Norway to enable us to refer individual specimens to precise localities. One type well represented is a banded hornblende-gneiss showing lenticular white and dark streaks about half an inch wide, rich in feldspar and in hornblende respectively. The quartz is partly interstitial, partly in rounded grains enclosed by the hornblende. Another type has the dark streaks composed largely of deep brown mica, with some silvery white mica in addition, the flakes set parallel to the general direction of banding. Another rock is richer in feldspar and of finer texture, showing a compact white mass enclosing grey quartz-grains and black crystals, about one-fifth of an inch long, of hornblende with parallel arrangement. Still another type is fine-grained and dark, the most conspicuous

element being dark brown mica in little glistening parallel flakes, while a lens shows black hornblende in addition. Hornblende-schists and mica-schists are found also of various types, one not uncommon among the boulders being a dark mica-schist enclosing dark red garnets round which the streaks of filmy brown and pale micas bend like the grain of wood around knots. A finer-grained type has smaller garnets, and the white mica more prominent relatively to the dark.

Other types met with among the Holderness boulders might be referred to, but with less certainty as to the precise locality of their home; such, for instance, as certain quartzites possibly from the quartzite-conglomerates of the Bergen district; and no doubt many of the remarkable metamorphic rocks there studied by Reusch may have furnished specimens to the ice-sheet which reached our shores. Further examination would be certain also to detect more types from the Christiania district; probably the red quartz-syenite which Brögger has named 'nordmarkite,' which covers a considerable area of ground, and his 'laurdalite,' a rock allied to the augite-syenites noticed above, but containing, in addition, the minerals elæolite and sodalite. Indeed an English mineralogist might, perhaps, profitably search among our boulders for examples of the 'syenite-pegmatite-veins' in which the geologist just named has found so long a list of rare and remarkable minerals. I have said enough, however, to show that these strangers among our local boulders, although they form but a small percentage of all those embedded in the clays and washed out on to the modern beach, may usefully occupy a collector in the district and afford material for interesting petrological studies, while illustrating one of those links between Yorkshire and Scandinavia of which another writer has spoken in a recent volume of 'The Naturalist.'

NOTES AND NEWS.

Entomological science has to mourn the decease of one of its most eminent votaries, Mr. Henry T. Stainton, F.R.S., having succumbed to a long and painful illness on the 2nd of December. The value of the work which he has accomplished in the study of our Lepidoptera generally, as well as in respect of his favourite group the Tineina, can scarcely be over-estimated, while his personal qualities have endeared him to all his contemporaries, as well among those who knew him only by his writings as among those who had the pleasure of his personal friendship.

Mr. Stainton's last piece of work was the Editorship of the Ray Society's reproductions of Buckler's exquisite drawings of the Larvæ of British Lepidoptera; a work which only his fatal illness compelled him to relinquish; and we understand that it was a great satisfaction to him in that illness that he was able to induce so competent a successor as Mr. Geo. T. Porritt to promise to continue it for the future, a satisfaction which will be shared by all who know Mr. Porritt, and the work he has himself achieved in working out the transformations of rare species of Lepidoptera.—W.D.R.

BIRD-NOTES FROM THE HUMBER DISTRICT IN THE AUTUMN OF 1892.

JOHN CORDEAUX, M.B.O.U.,

Eaton Hall, Retford.

IN publishing this notice in 'The Naturalist' on the migration of birds in the past autumn in the Humber district, I have again to express my best thanks to those friends and correspondents on each side of the Humber who have sent me their notes and observations. In Yorkshire, I am more particularly indebted to Mr. H. B. Hewetson, of Leeds, and Mr. Philip Loten, of Easington. In Lincolnshire, to Mr. G. H. Caton Haigh, of Grainsby Hall; in the latter case the notes sent have a special value as being nearly continuous and the observations of a very keen and competent naturalist, who has at his command every facility for the pursuit of a favourite study.

It will be observed that the chief interest of the past season has been in connection with the two 'great rushes' of migrants, first on September 20th and 21st, and again on October 13th to 16th, under exactly the same meteorological conditions; also in the most unusual number of rare or occasional wanderers which have turned up in the district.

So far I have not been able to record either Shore-larks or Lapland Buntings, both of which species appeared on the Norfolk coast after the easterly gale of October 14th, and the latter in extraordinary numbers so as to considerably exceed the total of all the known occurrences hitherto recorded in Great Britain—in fact more than double the record.

Pernis apivorus. Honey Buzzard. June 21st. An immature male was shot at Enholmes Hall, Patrington. The stomach contained remains of thrushes' eggs, grubs, and beetles.

Hirundo rustica. Swallow. July 14th. Wind N., much rain, very cold. Many young which had left the nests at Easington, died of cold and exposure, and some of the old left the neighbourhood. On October 14th, at the same place, I counted fourteen young on a spout which was carried across the gable of a house. Last seen in North Lincolnshire on October 30th.

Numenius phæopus. Whimbrel. August 1st. Fairly common on the coast at this date and to the end of September.

Squatarola helvetica. Grey Plover. August 1st. Three young of the year seen by Mr. Haigh at Tetney. Several, both adult and young, on the coast between Kilnsea and Spurn on

October 13th; one which I shot when flying from the land to the coast, had as much soil adhering to the forehead and bill as might contain several seeds of plants.

Hæmatopus ostralegus. Oyster-catcher. August 1st. Large flock near Tetney Haven. September 6th. Flock of forty off Stallingborough fitties, some distance within the Humber. A few at Spurn on October 13th.

Tringa canutus. Knot. August 11th. Young buff-breasted Knot in flocks on coast. Birds with the under parts faded to pale-orange, and the shiny black feathers on the upper parts almost white, have been unusually numerous at Spurn. Two also in rich plumage—little faded—were shot near Tetney on September 1st. The flights this autumn have been unusually large. Enormous masses of young Knot were seen on the beach at Sandy Island, Heligoland, on September 4th.

Totanus canescens. Greenshank. August 12th. A few on the coast near Tetney. Were fairly common on both sides of the Humber to the end of September. I shot one near Kilnsea on October 13th, but lost it in the sea, and saw a single bird on the fitties near Tetney on November 3rd—a late date.

Calidris arenaria. Sanderling. August 12th. Some on Lincolnshire coast. Oct. 12th; of three shot at the Spurn to-day not one was quite in winter plumage.

Machetes pugnax. Ruff. August 19th. Ruff and Reeve seen by Mr. Haigh on North Cotes shore. One, a young male, shot near Kilnsea, in September.

Muscicapa atricapilla. Pied Flycatcher. August 19th. Mr. Haigh saw many young birds on Lincolnshire coast, near North Cotes; some also were seen in the Spurn district. Mr. H. B. Hewetson, in the last fortnight in August, when returning from Sweden to Hull, in s.s. 'Cameo,' writes, 'about mid-ocean two Pied Flycatchers, a young Redstart and Sanderling came on board.' There was again a very considerable arrival of the species on the Lincolnshire coast on Sept. 7th, seen by Mr. Haigh, 'scattered and single all along the sea-bank and adjoining hedges, from North Cotes to Grainthorpe Haven.'

Heligoland. 'Enormous numbers of *Muscicapa luctuosa* and *Sylvia phœnicurus* have been visiting the island, beginning with the former as early as August 8th; 18th a perfect rush; 4th Sept., again from noon a great many; wind in the morning light W., changing at 12 p.m. to N. On the 21st again a rush of above, mixed with *trochilus*, *hortensis*, and a sprinkle of *rubecula* and *suecica* (H. Gätke).'

Saxicola œnanthe. Wheatear. August 14th to end of September; great numbers on passage from N. to S. along coast at intervals. On Sept. 18th, Mr. H. B. Hewetson, of Leeds, in company with his two sons, observed a russet-coloured Wheatear with the sides of the head and throat black, near the chalk embankment at the Spurn; he wrote, 'I was quite close to it for some time as we walked along, it flew on with a party of Wheatears.' It may have been an adult male of *Saxicola stapazina* or perhaps *S. deserti*; but presuming that Mr. Hewetson's sketch of the head of this bird, which he sent me shortly after seeing it, is absolutely correct as to the extension of the black to the lower throat, it is suggestive rather of *S. melanoleuca* (Güld.), the eastern form of the Black-throated Chat. On Oct. 16th, I saw a few Wheatears which had come in with the 'great rush' on 14th and 15th, perched on rails and hedges—large fine brown birds—near Kilnsea and Easington shore.

Totanus glareola. Wood Sandpiper. Sept. 1st. Mr. Haigh reports a bird of the year, shot from a pond in Grainsby Park.

Limosa lapponica. Bar-tailed Godwit. Aug. 22nd. A flock was seen by Mr. Haigh on the coast—very considerable numbers on the mud within the Spurn in September. Have been very common in the Humber during the autumn.

Tringa minuta. Little Stint. Aug. 19th. A pair seen on the Lincolnshire coast, and after this very numerous both there and at the Spurn, and in the latter locality in flocks of various sizes up to forty together, to the middle of September. On the 16th Mr. Haigh shot one near Saltfleet Haven, and saw another.

Tringa subarquata. Curlew Sandpiper. From the middle of August to the middle of September very common on both sides of the Humber. At Spurn several were shot having the underparts more or less a faded red or mottled with dull red, all the most richly-coloured obtained being, as Mr Hewetson informs me, old females. Those obtained on the Lincolnshire coast had buff breasts. Last observed on Lincolnshire coast by Mr. Haigh on October 5th.

Anthus pratensis. Meadow Pipit. August 24th. Great numbers on passage. Swarming on Lincolnshire coast.

Mareca penelope. Wigeon. August 26th. First Wigeon on coast. October 9th. Six young of year on sea-ponds at Easington—four shot.

Phylloscopus trochilus. Willow Wren. September 1st.

Mr. Haigh reports a considerable movement on the Lincolnshire coast. The last local bird seen by me was on September 25th. On October 14th and 15th, with an easterly gale and continuous rain there was a large immigration on the Holderness coast, the hedges and gardens near Kilnsea swarmed with them. Those I observed were very distinctly brownish on the upper surface, and the eye-streak was not very clearly defined.

Tadorna casarca. Ruddy Sheld-drake. September 1st.

One, a female, apparently in immature plumage, was shot from a pond on Humberstone 'fitties' by a Cleethorpes gunner, and is recorded by Mr. G. H. Caton Haigh (Zool., 1892, p. 360) in whose collection it now is.

Querquedula circia. Garganey. September 19th. A young

male was shot near Easington. This is the first autumn example I have ever had to record in the Humber district.

Puffinus anglorum. Manx Shearwater. One was killed

against the telegraph-wire near Easington in September. Mr. Gätke, writing from Heligoland, says that on October 21st one was obtained there, the first occurrence since fifty years ago, when it was not unfrequent.

Motacilla raii. Yellow Wagtail. September 13th. Mr. Haigh

observed a great immigration of this species on the Lincolnshire coast, young and old, all day, continuously from east, in flocks of five to fifty. For a detailed account of the migration of *M. raii*, see Zool., 1892, pp. 389-91.

Ruticilla phœnicurus. Redstart. September 21st. Mr. Haigh

writes:—'We have had the heaviest rush of small insect-eating birds that I have ever seen. On the 20th the wind shifted to N.E., and in the evening of that day it blew hard and rained in torrents all night. On the 21st I went down to the coast and found all the hedges swarming with Redstarts; some had got as far inland as Grainsby village (about five miles from coast). Other small birds were Whitethroats, Robins, Pied and Spotted Flycatchers, Wheatears, Hedge Sparrows, and a few Blue Tits. When the hedges were beaten the little birds came out in clouds, the Redstarts more numerous than all the rest put together.' 'On the 22nd Redstarts had decreased and Robins increased.' Between Easington and the Spurn on the 21st and the 22nd, a great many Redstarts. In connection with this immigration of Redstarts and Robins see Mr. J. H. Gurney's 'Notes from Norfolk' (Zool., 1892, p. 401). At Heligoland on

the 21st, a rush of Redstarts, and a sprinkle of Robins and Bluethroats. October 10th. Spurn. One young male shot. 15th. One male seen. Mr. Haigh shot one on the 19th, thinking it might be *R. titys*.

Erithacus rubecula. Robin. September 21st. First immigration as recorded above. Again on October 14th, 15th, and 16th. Easterly gales and heavy rain. An immense arrival in the Spurn district. Thousands came in and the hedges and gardens about Kilnsea and Easington were full of Robins. I counted up to fifty in one part of the warren-house garden in company with Goldcrests and Willow Wrens; many also had dropped in the long sea grass on the sand-hills, and some caution was necessary to avoid stepping on them, so reluctant were they to move. The movement extended also to the Lincolnshire and Norfolk coasts. Heligoland, Mr. Gätke says:—‘We had *rubecula* and *Regulus* on the 11th, 12th, and 13th, the former in great numbers.’ 14th. ‘Only in the morning great rush over the island, but not staying.’ The arrivals on the Holderness coast had all of them very pale-coloured breasts.

Accentor modularis. Hedge Sparrow. September 21st. Many on the Lincolnshire coast, first flight. October 14th to 16th. Great numbers at Spurn, Kilnsea, and Easington, with others.

Ruticilla suecica. Red-spotted Bluethroat. September 21st. Mr. Haigh writes:—‘On a hedge at North Cotes I saw an immature Bluethroat; it came out and sat on a twig within three feet of my face. Subsequently I got a snap shot at it, but falling, probably only winged, in very thick cover, was not recovered, although I spent most of the afternoon with two men looking for it.’ In the Spurn district one at least was seen; in Norfolk also ‘a few Bluethroats’ (Zool., 1892, p. 401). Heligoland, September 21st. ‘A sprinkle of *rubecula* and *suecica*.’

Anthus obscurus. Rock Pipit. September 22nd. First noticed on migration on Lincolnshire coast. October 3rd, more. On November 3rd, I saw many between Tetney and Grainthorpe Haven, chiefly confined to the banks of the outfall drains which cross the ‘fitties.’

Plectrophenax nivalis. Snow Bunting. October 3rd. First flock seen at Easington. October 13th to 16th. A few adult birds. October 22nd. A large flock came in at North Cotes. Again on October 28th, Mr. Haigh saw large flocks of Snow Bunting coming in from sea on Lincolnshire coast. November 20th. At this date Mr. Hewetson reports ‘there are tens of thousands of Snow Bunting about Kilnsea. I never saw any-

thing at all like it—shore and cliffs and stubbles alive, in flocks like Dunlin or Knot.’ Nov. 29th. Lincolnshire coast, immense immigration, inland to S.S.W., continuously to 3.30 p.m.

Anser brachyrhynchus. Pink-footed Goose. Flocks arrived on the coast in the fourth week of September.

Scolopax rusticula. Woodcock. Sept. 24th. A few early birds in the Spurn district. Oct. 13th to 16th. First flight, night of 14th or on early morning of 15th—of fourteen shot on this day, all of which I examined, seven were presumably young, having the outer web of the first primary brownish and with regular notch-like markings through its length, four had the outer web greyish-white and the notches obliterated; of the remaining three the markings were of an intermediate character, perhaps birds of the previous year. Presuming that the clearness or otherwise of the notches is indicative of youth or age, it would seem that both the old and young migrate at the same date and in the same flight.

Asio accipitrinus. Short-eared Owl. Oct. 14th to 16th. A few came at the same date as the Woodcock. I have an example shot this year at Spurn on August 6th—a very early date.

Falco æsalon. Merlin. Several seen about Kilnsea first fortnight in October.

Asio otus. Long-eared Owl. Oct. 15th. One shot on the sand-hills.

Phylloscopus superciliosus. Yellow-browed Warbler. Oct. 7th. Mr. Haigh has recorded in ‘The Zoologist,’ 1892, p. 413, having shot one from a hedge near the sea-bank at North Cotes. In his letter to me announcing the capture, he says, ‘It is the fattest little bird I ever skinned.’

Regulus cristatus. Gold-crested Wren. Oct. 14th to 16th. Easterly gale, heavy rain, and very thick at sea. An enormous immigration of Goldcrests into the Spurn district, much the largest I have seen or recorded. One on 13th, wind N.; great numbers on 14th, E. gale; but on the 15th they seemed to have increased tenfold, swarming in every part of the district wherever any shelter or cover could be found—hedges and gardens were full—and the tiny birds so tame that they might have readily been taken with a butterfly net. Many were killed by country boys, and the village cats had a grand time of it, so also had the Grey Shrikes. The sallow-thorns covering the sand-hills between Kilnsea and the Point were densely crowded, each little migrant an animated olive leaf with a lady-bird on the stalk. On the Lincolnshire coast, Mr. Haigh says, ‘The rush of Goldcrests

was quite unprecedented in my experience. I did not see one on the 13th, but on the 14th and 15th they swarmed in every hedge in thousands, and were so tame that they could almost be taken by hand. Robins and Hedge Sparrows are also numerous.' On the Norfolk coast on the 15th, Robins are reported 'in hundreds,' 'Goldcrests in swarms.' They are also named in Mr. M. Bailey's Flamborough Bird-notes, Nat. 1892, p. 326, in swarms after the 13th. How much further to the north and also south this remarkable immigration extended we have unfortunately no means of knowing.

Regulus ignicapillus. Fire-crested Wren. October 15th.

When watching the Goldcrests passing inland from the coast to-day, I had the good fortune to see for some minutes a fine adult male Fire-crested Wren which came into the hedge under which I was sheltering, and perched on a twig close to my face, having first made an attempt to alight on the stick of an open umbrella held horizontally across the shoulder. It was a finer example than one I got from Easington in 1889 (Nov. 4th). Amongst the many thousands of Goldcrests this was the only one I came across, although making much careful search.

Lanius excubitor and L. major. Great Grey Shrike. October

15th. Mr. R. Hewetson and Mr. Craggs Clubley, of the Warren-house farm, when looking for woodcock saw twenty Grey Shrikes between Kilnsea and Spurn—five or six together, the rest singly. On the morning of the 16th I saw seven or eight between Easington and Kilnsea. One of these I beat from a black-thorn thicket where he was doing his best to circumvent a Goldcrest, the place swarming with them. Another was hovering kestrel-like over a stubble-field, and often changing position from place to place, others on the wing or perched on the highest twigs in hedge-rows, one on the telegraph wire. In the warren-house garden a handsome adult male, with one wing spot, strove hard to catch a Robin, both chaser and chased threading their way through several clumps of broom and gorse; finally the Robin got into an elder bush, and the Shrike just above him ready to seize; luckily for the intended victim, he managed to drop into a hole in some loose rockwork. The Shrike watched the spot, his head on one side, most intently, like a cat; but after a time gave it up, perching on the handle of a spade, from which point of vantage he speedily pounced on a Goldcrest, seizing it by the nape, and the last I saw of him was trying to fasten it on the spikes of a wire fence. The mob of small birds in this garden, and the Goldcrests in the black-thorn, did not show any

dread of the Shrike, although in their very midst, treating him as a most harmless and privileged guest, and in very singular contrast to the commotion amongst small birds

‘When the falcon’s shadow saileth across the open shaw.’

Here too, in this garden, was a cat, so gorged with small birds as to be incapable of further mischief. Grey Shrikes are reported at Flamborough at the same date, but so far I have heard of none on the Lincolnshire coast. In Norfolk, two were shot near Yarmouth, and others seen about the 16th, as Mr. Gurney informs me.

Gallinago cœlestis. Common Snipe. October 14th to 16th.

Many came in at the same time as the woodcock. Also the ‘first flight’ of foreigners, September 20th and 21st. Local birds were shot near Kilnsea as early as third week in August.

Gallinago gallinula. Jack Snipe. October 14th to 16th.

The same remark will apply, but in less number. First shot by Mr. Haigh on September 24th.

Pratincola rubicola. Stonechat. October 13th. A few near Kilnsea, greatly increased on 14th to 16th by both adult and young birds.

Turdus merula. Blackbird. October 15th. E. gale, rain.

In very considerable numbers on the Yorkshire and Lincolnshire coast, and not observed before this date in any number.

Turdus torquatus. Ring Ouzel. September 21st and 22nd.

One picked up killed against telegraph-wire at Easington, several seen there same date. October 15th. E. gale, rain. Many about Kilnsea and Spurn. Lincolnshire coast, pretty common on 14th and 15th. I found none near Kilnsea on 16th, and Mr. Haigh says on the 19th ‘all the Ring Ouzels have left.’ They are as a rule very soon off again, rarely remaining longer than a day or two anywhere when on passage. November 7th. At Easington, several seen.

Turdus iliacus. Redwing. October 13th. A few in bents and sallow-thorns on Spurn coast, more towards evening. On the 14th and 15th, great flight with others.

Turdus musicus. Song Thrush. October 10th. I flushed several to-day from swedes when shooting along Dimlington high land and close upon the cliff edge. From their manner they were evidently fresh arrivals in the previous night. Great numbers came in from the 13th to 16th and subsequent days.

Turdus pilaris. Fieldfare. A few on October 16th, but the multitude after this date, following the gale and not preceding it. October 22nd. First seen on Lincolnshire coast.

Cypselus apus. **Swift.** October 10th. One seen at dusk near Easington.

Corvus cornix. **Hooded or Grey Crow.** October 3rd. First arrivals on the Lincolnshire coast. The main body did not arrive till the 16th at early morning, when many were seen about Spurn and Kilnsea. These likewise followed the easterly gale and did not precede it.

Vanellus vulgaris. **Lapwing.** September 24th. On Lincolnshire coast several flights about this date, and on October 4th and 5th. Great numbers also from October 16th to 20th, the fag-end of the 'great rush.' On November 3rd, on the coast between Tetney and Grainthorpe Havens I noticed Lapwings in very considerable flocks arriving from the east at short intervals, flying very low and passing inland; the movement ceased at 2 p.m. The wind on the previous night had been east and squally. This day, however, for sunshine and temperature was a midsummer one, and almost too warm to carry winter clothing. There were very few birds to be seen on the coast beyond the noisy Redshank and a few handsome Redwing in the bents. In the afternoon, however, as the tide came in, vast flights of Knot and Dunlin got on the wing and went careering southwards—now invisible, and then instantly passing into clouds of drifting snow-flakes. Through the morning I had marked along the outer rim of the horizon those long white lines suggestive of breakers, but these never changed their outlines, and with the aid of a glass became speedily resolved into thousands of gulls on distant sands. I have walked this coast for nigh forty years now, in all seasons and weathers—other old haunts have changed their character, but this changeth not—it is ever the same, 'the level waste, the rounding grey'—a dreary interminable expanse of mud, shifting sand, and water; a foreground of low sand-hills, barren or clothed with reed-like grasses and prickly sallow-thorn, 'fitties,' broken by creeks and spread with irregular shallow pools of brackish water fringed by a dense growth of salt-loving plants.

' Miles and miles and miles of desolation !

Leagues on leagues without a change !

Sign or token of some eldest nation

Here would make the strange land not so strange.

Time forgotten, yea since Time's creation,

Seem these borders where the sea-birds range.'

Tringa alpina. **Dunlin.** Oct. 13th. One near Kilnsea with black breast.

- Buteo lagopus.** **Rough-legged Buzzard.** Oct. 15th. Two seen on coast near Kilnsea; other buzzards seen about this time but not identified.
- Alauda arvensis.** **Sky-Lark.** Oct. 13th to 20th. Great immigration.
- Sturnus vulgaris.** **Starling.** Oct. 13th to 20th. The same. Many were killed against the telegraph-wires on Kilnsea Common and towards Spurn.
- Corvus frugilegus.** **Rook.** Oct. 15th to 19th. Great immigration.
- Uria troile.** **Common Guillemot.** Oct. 16th. I found one in full winter plumage, and in excellent condition, dead in a lane near Easington. It was a storm-driven bird, and had been brought inland by the easterly gales of the previous day.
- Alcedo ispida.** **Kingfisher.** Oct. 20th. I saw the first on Cotes Beck. Mr. Haigh also saw the first he has seen this season on the Lincolnshire coast.
- Phylloscopus rufus.** **Chiffchaff.** Oct. 14th. Mr. Haigh shot the only one he has ever seen on migration on the Lincolnshire coast.
- Garrulus glandarius.** **Jay.** Oct. 12th. Mr. Haigh, writing from Grainsby Hall, says: 'We had very large numbers here on the 12th and again on the 15th.' None have been observed at Heligoland.
- Sylvia nisoria.** **Barred Warbler.** Oct. 19th. One, a bird of the year, was shot by Mr. J. W. Jalland, of Hull, at Easington at this date, thinking it might be a Bluethroat. This is the second example recorded from that locality. It was exhibited by Professor Newton at the meeting of the Zoological Society in London on November 1st, and subsequently acquired by Mr. W. Eagle Clarke for the Science and Art Museum, Edinburgh.
- Columba palumbus.** **Wood Pigeon.** Oct. 23rd. Migratory flock seen at Grainsby.
- Fringilla montifringilla.** **Brambling.** Oct. 30th. Two flocks of these handsome finches were seen near Easington by Mr. Jalland. Also a few Shore-larks.
- Coturnix communis.** **Quail.** Nov. 3rd. One was shot near Easington, and another near Hornsea, in the third week in September.

November 22nd, 1892.

BRITISH FUNGUS FLORA.

British Fungus Flora: A Classified Text-book of Mycology. By GEORGE MASSEE. In three volumes. Vol. I. Price 7s. 6d. Geo. Bell and Sons, London, 1892.

The student of British Mycology is ready to admit that for many years he has had to labour under difficulties, owing chiefly to the fact that no text-book was available on the subject containing descriptions of the British species. After a mycological excursion, he considered himself lucky should he succeed in determining one-half of the species collected. The doubtfuls, as a rule, were pitched into the dust-bin, a ready method of settling them, and there can be no question that many good species—and probably new ones—have often found their way into that useful receptacle.

It is more than twenty years since Dr. Cooke published the 'Handbook of British Fungi,' a work which has served its purpose admirably and to which most British mycologists of to-day are indebted for their first acquaintance with our mycological flora. But since the publication of the Handbook, mycology has advanced by leaps and bounds in every direction, and the number of British species has almost doubled. So that there is not much cause to wonder that an up-to-date edition has often been devoutly wished for. Yet where was the person competent to bring out a work dealing with something like five thousand species? And when Stephenson's 'Hymenomycetes Britannici' (1886), Phillips' 'British Discomycetes' (1887), Plowright's 'British Uredineæ and Ustilagineæ' (1889), and other monographs made their appearance, it was apparent that our mycological flora was to be dealt with piecemeal, and the student rested content, awaiting further monographs.

No one in this country knew more of the disadvantages of mycological students than our esteemed member of the Y.N.U., Mr. George Masee, of Kew, and no one was more competent to supply the requirements of students. The first volume of 'British Fungus Flora' will therefore be hailed with delight, and we have pleasure in stating at the outset that the work is a truly honest production, and full of merit. It is in every sense well 'got-up,' the paper, printing, and binding leaving nothing to be desired.

The present volume is devoted to Basidiomycetes, and in the introduction a well-written but brief description is given of the nature and origin of Fungi. After describing the characteristics of the Basidiomycetes the work practically begins. Unlike previous books on this subject, the Gastromycetes take the lead, and it is at once evident that the author has taken pains to make the species of this group more easy of recognition than they have hitherto been.

The Order Pilacreæ with its single genus of two species, hitherto classed with the Hyphomycetes, is doubtless rightly placed, as a connecting link between the Gastromycetes and Hymenomycetes. A good account is next given of the structure and chief characteristics of Hymenomycetous fungi, after which follow descriptions of the families and species. In previous works it has been the custom to commence this group with the highest-developed species and proceed downwards, but Mr. Masee does not always believe in following a beaten track, and has preferred to begin with the lowest forms, Tremellineæ. We do not, however, see any advantage in the change. Much labour has been bestowed upon the family Thelephoreæ, and several new genera have been created. It is evident that the author has been at a loss what names to adopt for these new genera, and in our opinion it would be quite as easy to select a characteristic name both for genera and species, rather than after individuals.

In the Polyporeæ the dividing of *Polyporus* into four genera is a welcome innovation, and will prove useful to the student. Turning to Agaricineæ—the black- and purple-spored sections of which occupy the remainder of the volume—opinions will differ as to the advisability of elevating all the sub-genera to the rank of genera. Mr. Masee's idea is that more good than harm will be effected by the change. The blackish-spored section (Melanosporæ), include *Anellaria*, a small and well-marked genus split from *Panæolus*, and *Gomphidius*—which is placed here 'purely on technical grounds'—together with *Coprinus*, *Panæolus*, and *Psathyrella*. In the purple-spored section (Porphryosporæ), the name *Agaricus* is applied to the hitherto sub-genus *Psalliota*.

The student will no doubt soon familiarise himself with the alterations, which have been made for his benefit. An especial feature in this volume is the excellent manner in which the descriptions of species have been drawn up. In addition to the original description, which in some cases is lengthy, notes from other authorities are given, together with those of the author, in fact Mr. Masee takes the student as it were by the hand and does nearly all for him except the collecting. The small drawings illustrating more than a hundred species, are a valuable accompaniment to the text. We have already had an opportunity of putting the work practically to the test, and it fulfils its purpose extremely well. And we have not the slightest hesitation in saying that it should be in the hands of every student, and on the shelves of every naturalist's library as a work of reference. A little more care in correcting proofs of future volumes—which, we trust, will not be long delayed—will perhaps prevent printer's errors, which, although few in number, here and there have slipped through.

H. T. S.

Naturalist,

A CHECK-LIST OF BRITISH EARTH-WORMS.

REV. HILDERIC FRIEND, F.L.S.,

Author of 'Flowers and Flower-Lore,' Idle, Bradford.

THE past year has been the most fruitful on record in its bearings on the number and distribution of our indigenous terrestrial annelids. Hitherto no list has been prepared by means of which collectors could check their local species, and the time seems to have arrived when such a catalogue should be drawn up for future reference. Several ends will thereby be secured. We shall see, in the first place, exactly how many British species were known to science when the year 1892 closed its record of research. We shall have a clue to the distribution of the species. A guide will be afforded to collectors who wish to identify their captures, and, finally, a list will be provided for checking the same when found in any given locality.

Our earthworms fall under four genera, and number at present 25 species. I shall give a brief outline of each genus, then the names of the species, with the number of girdle and band segments, and their known distribution in counties. The figures in the form of a fraction denote the number of the segments covered by the girdle in the normal condition, and the number of the girdle segments on which the *tubercula pubertatis*, i.e., the clitellar papillæ or bands, are situated. Thus $\frac{24}{26} - \frac{31}{27}$ would signify that the girdle covered segments 24 to 31, on two of which, viz., the 26th and 27th, papillæ or bands occur when the worm is adult.

I. GENUS LUMBRICUS.

Lip forming with the first ring a perfect mortise and tenon. Girdle of five or six segments—the four innermost carrying a band on each side. Setæ eight on each segment in four couples, the individuals near together. Male pores on the 15th segment with or without papillæ. Colour dark-red or brown with iridescence. Cylindrical in front, tail flattened. Exude slime when irritated, but no turbid liquid. Five species at present known in the British Isles.

1. **Lumbricus terrestris** Linn. $\frac{32}{33} - \frac{37}{38}$. *Distribution*—Sussex, Kent, Middlesex, Surrey, Essex, Norfolk, Leicestershire, Hertfordshire, Somersetshire, Wiltshire, Oxford, Northants, Sark, Devonshire, Gloucester, Bucks, Nottinghamshire, Lancashire, Montgomery, Northumberland, Yorkshire, Westmorland, Cumberland, N. Wales, S. Scotland, Ireland. **New records wanted.**

2. **Lumbricus rubellus** Hoffm. $\frac{27}{28}-\frac{32}{31}$. *Distribution*—Same as No. 1.
3. **Lumbricus purpureus** Eisen. $\frac{28}{29}-\frac{33}{32}$. *Distribution*—Same as No. 1.
4. **Lumbricus rubescens** Friend. $\frac{34}{35}-\frac{39}{38}$. *Distribution*—Sussex, Kent, Middlesex, Norfolk, Gloucestershire, Yorkshire, Lanarkshire, Down, Dublin.
5. **Lumbricus papillosus** Friend. $\frac{33}{34}-\frac{37}{37}$. *Distribution*—Co. Dublin, Ireland. [On the Continent *L. melibæus* Rosa, has similarly only five girdle segments. These species have hitherto not been found in England.]

II. GENUS ALLOLOBOPHORA.

Lip partially dovetailed into first ring. Girdle segments from four to ten in number. *Tubercula pubertatis* on consecutive or alternate segments, either as papillæ or forming a distinct band. Setæ eight in four couples, more or less irregularly disposed. Male pores as in *Lumbricus*. Colour-range very wide—brown, clay, flesh, green—seldom iridescent. Usually cylindrical throughout. Exude slime or turbid fluid, sometimes very pungent. Nine British species known.

6. **Allolobophora longa** Ude. $\frac{28}{32}-\frac{35}{34}$. *Distribution*—Same as No. 1.
7. **Allolobophora profuga** Rosa. $\frac{30}{31}-\frac{35}{34}$. *Distribution*—Nottinghamshire, Hertfordshire, Montgomery, N. Wales, Gloucestershire, Norfolk, Yorkshire, Westmorland.
8. **Allolobophora turgida** Eisen. $\frac{28}{31}-\frac{34}{33}$. *Distribution*—Sussex, Essex, Devonshire, Norfolk, Yorkshire, Somersetshire, Wilts, Herts, Lancashire, Middlesex, Notts, Dublin, Down, Kerry, Kent, Westmorland, Cumberland, Gloucestershire, Montgomery, N. Wales, Lanarkshire, Perth. Formerly confused with the next; on which account the earlier records for Nos. 8 and 9 are unreliable.
9. **Allolobophora trapezoidea** Dugès. $\frac{27}{31}-\frac{34}{33}$. *Distribution*—Essex, Norfolk, Nottinghamshire, Somersetshire, Yorkshire, Gloucester, Bucks, Oxford, Herts, Cumberland, Lancashire, Lanarkshire, Westmorland, Montgomery, N. Wales, Kerry. See No. 8. Note that in one case the papillæ are on two alternate segments (31: 33), while in the other they cover three consecutive segments (31-33).
10. **Allolobophora mucosa** Eisen. $\frac{26}{29}-\frac{32}{31}$. *Distribution*—Sussex, Devonshire, Norfolk, Essex, Nottinghamshire, York-

shire, Lancashire, Oxford, Leicestershire, Montgomery, Northants, Somersetshire, Herts., Cumberland, Westmorland, Dublin, Down, Kerry, Lanarkshire, Perth.

11. **Allolobophora chlorotica** Savigny. $\frac{29}{31} : \frac{35}{35} : \frac{37}{35}$. *Distribution*—Same as No. 1.
12. **Allolobophora cambrica** Friend. $\frac{29}{31} : \frac{35}{35} : \frac{37}{35}$. *Distribution*—Montgomery. Note that while the girdle-formula is the same as No. 11, the two worms are totally different internally and externally in every other respect.
13. **Allolobophora foetida** Savigny. $\frac{27}{28} - \frac{32}{30}$. *Distribution*—Same as No. 1. This is the angler's Brandling.
14. **Allolobophora hibernica** Friend. $\frac{27}{30} - \frac{33}{31}$. *Distribution*—Dublin, Louth (Ireland).

III. GENUS DENDROBÆNA.

A group of small rose-brown worms found in decaying trees, with setæ usually in eight rows, and very delicate lip, whose insertion into the first ring varies widely. They exude a small quantity of yellow fluid from the dorsal pores, which begin between the 5th and 6th segments. See Friend, *Journ. Linn. Soc., Zoology*, vol. xxiv, p. 292 et seq.; and *Essex Naturalist*, Jan. 1893. There are six known species in Great Britain.

15. **Dendrobæna celtica** Rosa. $\frac{30}{33} - \frac{36}{34}$. *Distribution*—Kent, Sussex, Devonshire, Gloucestershire, Yorkshire, Northants, Oxford, Somerset, Lancashire, N. Wales, Lanarkshire, Dumfries.
16. **Dendrobæna arborea** Eisen. $\frac{27}{29} - \frac{31}{30}$. *Distribution*—Norfolk, Essex, Sussex, Gloucestershire, Yorkshire, Cumberland, Hertfordshire, N. Wales, Dublin.
17. **Dendrobæna boeckii** Eisen. $\frac{29}{31} - \frac{33}{33}$. *Distribution*—Yorkshire, Lanarkshire (Scotland). Only two authenticated records. Earlier records belong to the next. A boreal species.
18. **Dendrobæna subrubicunda** Eisen. $\frac{26}{28} - \frac{32}{30}$. *Distribution*—Same as No. 1.
19. **Dendrobæna constricta** Rosa. $\frac{26}{0} - \frac{31}{0}$. *Distribution*—Sussex. A southern and continental form.
20. **Dendrobæna eiseni** Levinsen. $\frac{24}{0} - \frac{32}{0}$. *Distribution*—Sussex, Essex, Norfolk, Devonshire, Yorkshire, Gloucestershire, Hertfordshire, N. Wales, Cumberland, Dublin.

IV. GENUS ALLURUS.

Male pores on segment 13. Semi-aquatic. Five known British species.

21. **Allurus tetraedrus** Savigny. $\frac{2}{2} \frac{2}{3} - \frac{2}{2} \frac{6}{6}$. *Distribution*—Same as No. 1.
22. **Allurus amphisbæna** Dugès. $2 \frac{2}{7} - 2 \frac{7}{7}$. *Distribution*—Sussex. An element of doubt lingers around this species which I hope to be able soon to remove.
23. **Allurus tetragonurus** Friend. $\frac{1}{1} \frac{8}{6} - \frac{2}{2} \frac{2}{1}$. *Distribution*—N. Wales (Bangor).
24. **Allurus flavus** Friend. $\frac{2}{2} \frac{2}{3} - \frac{2}{2} \frac{7}{5}$. *Distribution*—Cumberland, Yorkshire.
25. **Allurus macrurus** Friend. $\frac{1}{2} \frac{5}{0} - \frac{2}{2} \frac{2}{1}$. *Distribution*—Dublin.

I omit all allusion to aliens imported with soil from abroad, as well as doubtful species which need confirmation. The consignments which reach me week by week from Ireland give promise of new species, and I should be delighted to receive material from the Isle of Man, the Scilly, Orkney and Shetland Isles, the Highlands of Scotland, and other unworked parts of the kingdom. Worms may be sent in tin boxes with soft moss, when they will arrive in clean condition for immediate study.

NOTE—COLEOPTERA.

Bostrichus capucinus in Imported Oak at Hull.—I have received from Mr. Stevenson, a timber merchant of this town, some specimens of a wood-boring beetle which infested some foreign oak he had. This oak had been received from Odessa in Sept. 1891, and no traces of anything of the sort were observed when it was sawn up at the latter end of that year, but some he had left was noticed about a month ago to be bored with holes about $\frac{3}{16}$ th of an inch in diameter, by the larva of a beetle. Luckily, however, it appears to have confined its depredations principally to the outer 'sap-wood,' and it has only occasionally bored into the solid wood. Most of the beetles escaped before they were noticed, but a few were captured and given to me. These turn out to be *Bostrichus capucinus*, a beetle very rare indeed for England, and which does not appear to have been taken at all since 1867. It is a striking looking beetle about 9 mm. in length, the head and thorax being black and very rugose, while the elytra and part of the abdomen are red. The Rev. W. W. Fowler, who kindly named it for me, gives the following records for this beetle in his 'Coleoptera of the British Islands':—'Very rare, does not appear to have been taken for many years. Stephens gives as localities London district, Cromer, Derbyshire, Notts, and Bewdley. In Dr. Power's collection there is a specimen from E. Brown's collection taken at Burton in 1867, and another from Bentley's collection. Mr. Dale records the capture of one . . . at Glanville Wootton, July 2nd, 1854. Mr. Rye ('British Beetles,' p. 146, 1866) records a specimen as recently taken near Highgate on a felled oak.' The borings of this beetle are very shallow, as a rule not more than an inch in depth and then proceeding laterally. It is very probable that all our specimens have been imported from the Continent with the timber, and it is almost certain that in this record, the eggs were on the oak when it arrived in this country, although they were not noticed.—

WALTER F. BAKER, 5, Cavendish Square, Hull, Dec. 13th, 1892.

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DIPTERA, 1888, 1889, 1890, and 1891.

THE present instalment (which is the second instalment of the Bibliography of Diptera) has been compiled and edited by

WM. DENISON ROEBUCK, F.L.S.

The first instalment, covering the years 1884 to 1887 inclusive appeared in 'The Naturalist' for January 1889, p. 17.

- ANON. [signed 'Entomologist']. Linc. S.
The Hessian Fly [(*Cecidomyia destructor*)]; a popularly written account; incidental mention that 'South Lincolnshire . . . has suffered considerably'. Journ. of Horticulture; reprinted in Journ. of Microsc., Jan. 1888, p. 15.
- ANON. [not signed]. York S.E.
The Hessian Fly [*Cecidomyia destructor*] from Russia [at Hessel near Hull, observed by Edm. Riley]. Land and Water, Jan. 7th, 1888, p. 24.
- ANON. [Ed. Field]. York S.E.
Insects [*Chlorops teniopus*] destructive to Barley [at Melbourne, Yorkshire; species determined by Eleanor A. Ormerod]. Field, Sep. 1st, 1888, p. 345.
- FRANCIS G. BINNIE. York Mid W.
List of Cecidomyidæ found near Tadcaster [18 species, of genera *Cecidomyia*, *Diplosis*, and *Hormomyia*, are included, with localities and character of gall indicated]. Nat., Ap. 1889, pp. 101-102.
- E. BRUNETTI. Linc. N., Cheshire.
Notes on Diptera in 1888 [*Eutolmus rufibarbis* Mg., one, sent from Lincolnshire; *Dasyphora cyanella*, rather rare, a pair from Rigsby, Lincs.; *Graphomyia picta* Zett., the first specimen (a female) I have been able to keep, from Lincolnshire; *Phora rufipes*, some from Chester]. E. M. M., May 1889, pp. 281-282.
- E. BRUNETTI. York S.W.
List of the British Stratiomyidæ, with analytical tables and notes [*Chrysonotus bipunctatus* Scop., Yorkshire (p. 132); *Microchrysa flavicornis* Mg., var. *cyaneiventris*, one specimen in coll. R. H. Meade, taken near Bradford (p. 133)]. Ent., May 1889, pp. 132-133.
- E. BRUNETTI. Linc. N.
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- H. SHORTRIDGE CLARKE. Isle of Man.
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- D. EMBLETON. Durham, Westmorland, York N.W.
A Catalogue of the Place-Names in Teesdale [including one derived from the Midge; see pp. xiii, 99, 126 (Flea), 141 and 169 (Mawks or Maggots—on Sheep)]. Nat. Hist. Trans. of Northumb., Durham, and Newc., vol. ix, part i (1887), pp. i-xviii and 1-223.

- EDWARD A. FITCH. York Mid W.
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- A. E. HALL. York N.E.
[Cleg, *Hematopota pluvialis*, noted by] the Yorkshire Naturalists' Union at Hayburn Wyke [on July 11th, 1891]. *Nat.*, Sept. 1891, p. 287.
- H. H. HIGGINS. Lanc. S.
[Occurrence of *Anthrax hottentota* at Crosby in 1890; *Lanc. and Chesh. Ent. Soc.*, Sept. 8th, 1890]. *E.M.M.*, Oct. 1890, p. 274.
- PETER INCHBALD. York S.E.
Phytomyza chærophylli [the autumn generation abundant in the leaves of *Cherophyllum sylvestre* and more abundantly in those of *C. temulum*; presumably at Hornsea; life-history stated]. *Ent.*, Jan. 1889, p. 22.
- PETER INCHBALD AND R. H. MEADE. ? York S.E.
Notes upon *Phytomyza chærophylli*, Kalt. [reared from *Cherophyllum temulum*; locality not stated, but may possibly be Hornsea, whence Inchbald dates his note: Meade's contribution is a full description of the insect]. *Ent.*, Ap. 1889, p. 87.
- PETER INCHBALD. York S.E.
***Cecidomyia lychnidis* (Heyd.)** [on *Lychnis dioica*, presumably at Hornsea, but place not stated]. *Ent.*, Nov. 1889, p. 284.
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The Hessian Fly and some of its Congeners [the appearance of *Cecidomyia destructor* at High Leigh near Warrington being reported, investigation proved the pest to be *Chlorops teniopus*; the determination confirmed by Miss E. A. Ormerod; account of the attack given; extracts from Miss Ormerod's papers given]. *Young Nat.*, Jan. 1888, pp. 1-7.
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R. H. MEADE.

Westmorland and Furness, Cheshire.

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R. H. MEADE.

Furness.

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L. C. MIALL.

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S. L. MOSLEY.

York S.W.

The Yorkshire Naturalists' Union at Holmfirth [10th June 1889; *Culex pipiens*, *Tipula oleracea*, *T. maculosa*, *Sargus cuprarius* (pupæ, since bred), *Syrphus ribesii*, *Syrpitta pipiens*, and *Lucilia cesar* noted]. Nat., July 1889, p. 203.

R. NEWSTEAD.

Cheshire.

Insects, &c., taken in the Nests of British Vespidae [in Cheshire; *Cyrtoneura stabulans* Fall., *Homalomyia canicularis* L., *H. vesparea* Meade, n.sp., *Phora rufipes* Meig., *Acanthiptera inanis* Fall., and *Volucella bombylans* L. var. *plumosa* mentioned, with host, locality, date, and other details]. E.M.M., Feb. 1891, p. 41; Bibl. Notice in Ent. Record, Feb. 16th, 1891, p. 307.

R. NEWSTEAD.

Cheshire.

A query as to the Food of certain Dipterous larvæ found in nests of Vespidae [in Cheshire; notes on *Homalomyia canicularis* L.]. E. M. M., March 1891, p. 78.

ELEANOR A. ORMEROD.

York S.E.

The Hessian Fly [*Cecidomyia destructor*] and its introduction into Britain [recording the results of examination of imported straw at ports of entry, thousands of bales of straw being examined at Hull under the superintendence of E. A. Riley, result being negative]. Trans. Herts. Nat. Hist. Soc., Vol. 5, part 6 (Oct. 1889) p. 173.

GEORGE T. PORRITT.

I. of Man.

[Diptera taken on] an Entomological Expedition to . . . the Isle of Man [in June 1887; three Tipulidæ—*Amapolis littoralis*, *Pedicia rivosa*, and *Ptychoptera contaminata* near Douglas—named by R. H. Meade]. Nat., Ap. 1888, p. 107.

EDWARD RILEY.

York S.E.

[Hessian Fly (*Cecidomyia destructor*) at Welton Vale, 27th Aug. 1887]. Nat., Feb. 1888, p. 46].

EDWARD SAUNDERS.

York S.W.

Notes on a British Flea—*Typhopsylla assimilis*, Tasch. [found on *Sorex vulgaris* at Sheffield, etc.]. E. M. M., June 1891, p. 170.

G. A. SMALLWOOD.

Derbyshire.

Celery-fly [(*Tephritis onopordinis*) and its ravages in writer's garden at Willington, near Burton-on-Trent]. Ent., Jan. 1889, p. 21.

Jan. 1893.

H. T. SOPPITT.

York S.W.

A Swarm of Diptera [*Borborus equinus* Fallen] in February [17th, near Idle, in immense numbers; determined by R. H. Meade]. Nat., Ap. 1889, p. 102.

F. V. THEOBALD.

Northumberland, Lincolnshire.

An Account of British Flies (Diptera). . . Part II. [Dated 1891: at p. 57 the ravages of *Cecidomyia destructor* in Northumberland and Lincolnshire (the latter of which has suffered from the worst attacks) are noted]. Subsequent parts of this work not seen.

G. H. VERRALL.

'Lake District,' Derbyshire.

List of British Tipulidæ, &c. ("Daddy-Longlegs"), with Notes [*Dolichopeza sylvicola* Curt., the Lake District; *Tipula signata* Stæg., near Buxton, two taken by Mr. Theobald]. E. M. M., June and July 1888, pp. 20 and 24.

G. H. VERRALL.

Westmorland.

Critical Notes on Diptera [*Chironomus flexilis* L., near Rydal, confirmed]. Ent., May 1890, p. 152.

CHAS. H. H. WALKER.

Cheshire.

Microscopical Notes [on the Cheshire side of the Mersey; *Musca vomitoria*, *M. caesar*, and *Corethra plumicornis* (larva), noted 25th May, 1889]. Young Nat., Sep. 1889, pp. 185-188.

NOTES—LEPIDOPTERA.

Entomological Society of London.—November 2nd, 1892.—Mr. S. Stevens exhibited, for Mr. J. Harrison, of Barnsley, and read notes on, a beautiful series of *Arctia lubricipeda* var. *radiata*, which had been bred by Mr. Harrison this year. Mr. C. G. Barrett exhibited dark varieties of *Acronycta leporina*, bred by Mr. J. Collins, of Warrington. Mr. J. A. Clark exhibited a long series of remarkable varieties of *Liparis monacha*, bred from a pair taken at Scarborough. Several of the specimens were as light in colour as the typical form of the species; others were quite black; and others intermediate between these two extremes.

Entomological Society of London.—December 7th, 1892.—Mr. F. W. Frohawk exhibited a living specimen of the larva of *Carterocephalus palæmon* (*Hesperia paniscus*), hibernating on a species of grass which he believed to be *Bromus asper*. The Rev. Canon Fowler and Mr. H. Goss expressed their interest at seeing the larva of this local species, the imagos of which they had respectively collected in certain woods in Lincolnshire and Northamptonshire. Mr. Goss stated that the food-plants of the species were supposed to be *Plantago major* and *Cynosurus cristatus*, but that the larva might possibly feed on *Bromus asper*. Mr. C. G. Barrett exhibited a long series of remarkable melanic and other varieties of *Boarmia repandata*, bred by Mr. A. E. Hall from larvæ collected near Sheffield.—H. Goss and W. W. FOWLER, Hon. Secretaries.

NOTES AND NEWS.

There is a very interesting paper in our contemporary 'The Natural History Journal' for Oct. 15th, 1892, by Mr. J. Lovel, F.R.Met.S., upon 'The Cloudburst at Round Hill, Langtoft,' in East Yorkshire, and its destructive effects, which are described in detail, explained, and illustrated by a sketch-map, and a couple of reproductions of photographic views, one showing the manner in which the hill-side was torn up by the three water-spouts.

The 'Entomologist's Monthly Magazine' for November 1892, contains an obituary notice of the late John Thomas Harris, F.E.S., of Burton-on-Trent, a keen coleopterist and good botanist, one of the founders and an early President of the Burton-on-Trent Natural History Society.

WEST YORKSHIRE RECORDS AND NOTES.

FROM THE HERBARIUM, CATALOGUES, ETC., OF
THE LATE Mr. JOHN TATHAM, OF SETTLE.

WILLIAM WHITWELL, F.L.S.

THROUGH the painstaking kindness of the Misses R. F. and F. P. Thompson, of Settle, I was enabled to contribute a large number of records to Mr. F. Arnold Lees' 'Flora of West Yorkshire, based upon specimens and memoranda left by their grandfather, the late Mr. John Tatham. The examination of Mr. Tatham's herbarium and notes was not, however, begun until the printing of the 'Flora' was somewhat advanced, and in consequence many items of value obtained thereby were too late to be of service then. Also, the arrangement of the collection is on the Linnæan system: this occasioned the omission of various others.

In addition to his actual herbarium specimens, and a catalogue of them, Mr. Tatham left numerous memoranda in note-books and in his copy of the late Mr. Henry Baines's 'Flora of Yorkshire.' From the three sources the Misses R. F. and F. P. Thompson have compiled a supplementary list of West Riding localities for which Mr. Tatham's name may stand as authority, and have favoured me with it. I have checked the list with the 'Flora of West Yorkshire,' and after careful consideration of the several items (and in a number of cases the obtaining of the actual specimens, most of which Mr. J. G. Baker has obliged me by examining) have made the subjoined extracts from it.

Mr. F. A. Lees has referred ('Flora,' page 233, etc.) to Mr. Tatham's repute as an observer. The following brief biographical details will not be out of place respecting one whose name will always claim honourable mention in the annals of Yorkshire botany. For these also I am indebted to his grand-daughters.

JOHN TATHAM was born at Settle, Yorkshire, on the 20th September, 1793, and was educated at the neighbouring and well-known Giggleswick Grammar School. He served a seven years' apprenticeship to Mr. Thomas Thompson, of Liverpool, in the business of chemist and druggist, and continued with him for two or three years afterwards as assistant. Returning to Settle, he entered into partnership with his father, in the same line, and at Settle he passed the remainder of his life.

It was during his residence at Liverpool that Mr. Tatham first turned his attention to botanical study, a favourite recreation with

his master, and the interest then awakened remained active to the last, and has proved hereditary in his family.

In 1841 John Tatham was elected a member of the Edinburgh Botanical Society. He also joined the London Botanical Society, and through this double membership plant-specimens of his collecting became widely distributed and his name well known. He was likewise one of the original members of the Ray Society, founded in 1844. Mr. Tatham supplied lists of the plants of the Settle region to Dr. John Windsor for the 'Flora Cravoniensis,' and to Mr. Henry Baines for his 'Flora of Yorkshire;' also to the 'Phytologist' (Vol. I., page 87).

John Tatham was one of the party whose visit to Teesdale in 1844 resulted in the discovery of *Arenaria uliginosa* Schleich., its other members being James Backhouse, sen.; James Backhouse, jun. (afterwards the author of the 'Monograph of the British Hieracia'); G. S. Gibson, of Saffron Walden, and Silvanus Thompson. In 1849, and again a few years later, he made a tour in Scotland in company with the elder Backhouse; many characteristic Highland plants collected by him then are now in my possession.

The delight in natural history pursuits, and particularly in botanical science, which has so long happily characterised the Society of Friends, found full illustration in the present instance, as the families of Tatham and Thompson both belonged to that religious body.

Mr. Tatham died at Settle on the 12th January, 1875. He was twice married. His widow died on the 30th January, 1892, at the age of 94 years. She preserved his herbarium with great care, and was much interested in every recognition of Mr. Tatham's botanical work.

SILVANUS THOMPSON, youngest son of Mr. Thomas Thompson, married Mr. Tatham's second daughter. He was for many years a master in the large Friends' School at Bootham, York, and there did much to foster a love of natural science among the boys. Two of his pupils afterwards became distinguished botanists: Mr. J. Gilbert Baker, F.R.S., of Kew, and the late Mr. James Backhouse, of York ('British Hieracia'). He, as well as his father-in-law, contributed records to Baines's 'Flora,' the 'Phytologist,' etc. One of his sons is the well-known Principal of the Technical College, Finsbury—Dr. Silvanus Phillips Thompson, F.R.S.—noted for his contributions to electrical and magnetic science, and recently the discoverer of a second habitat for our Yorkshire *Arenaria gothica* Fries.

Mr. and Mrs. Thompson each had plant collections representing their earlier botanical work, and on their marriage these were combined to form one herbarium. When in 1864 Mr. J. G. Baker's house at

Thirsk was burnt down, his collections were destroyed, together with the greater part of the sheets of his just-printed 'North Yorkshire.' The joint Thompson herbarium was therefore given to Mr. Baker, but on his removal to Kew a private collection became unnecessary to him. At that time a request came from Sir James Hector for the supply of a typical series of British plants for the Wellington Museum, N.Z., and the Thompson-Baker collection was forwarded in response to the application, a selection from it having first been made for the British Herbarium at South Kensington.

Mr. S. Thompson died at Settle on the 3rd February, 1881. Mrs. Thompson died there in March, 1891, in the house in which she was born. For perfect gentleness and sweetness of character, warm, self-forgetting friendliness, and bright, thoughtful sociability, their names will long be cherished—by the writer and by many others who had the privilege of knowing them.

TATHAM RECORDS.

The page given after each plant-name is that of the 'Flora of West Yorkshire.'

H. indicates a specimen collected by Mr. Tatham himself, or not bearing another person's name.

Personal Names mark specimens so authenticated, actually in the herbarium now.

C. indicates species named in Mr. T.'s final catalogue of his collection, though the specimen is not now there.

MS. indicates species named in his manuscript notes elsewhere, usually in his copy of Baines's 'Flora of Yorkshire.'

It has been considered advisable to obtain a number of the herbarium specimens for examination. Most of these have been submitted to Mr. J. G. Baker: such are marked (J.G.B.). Those seen by myself alone are marked (W.W.).

Feizor Botanic Garden records (see for explanation *Epimedium alpinum* L.) are included in square brackets. These are retained in case of possible escapes.

RANUNCULACEÆ.

Thalictrum calcareum Jord. (as *majus* Sm.). Page 113.

R. Limestone hills, near Settle (J.G.B.). *MS.*

Thalictrum flavum L. Page 113.

R. Oustre-bank Wood (J.G.B.). *H.* This locality is sometimes in the 'Flora' assigned to the Lune district. It is a hanging wood on the bank of the Ribble between Settle and Stackhouse.

Ranunculus heterophyllus Fr. (as *aquatilis* var. *heterophyllus*).

Page 115.

R. In the Ribble. *C.***Ranunculus trichophyllus** Chaix. (as *aquatilis* var. *Pantothrix*).

Page 118.

R. In the Ribble. *C.***Ranunculus Lenormandi** Schultz. Page 119.A. At head of Rothersdale; *J. Backhouse*.**Ranunculus auricomus** L. Page 121.R. Lord's Wood. *H.* 'In all our woods.' *MS.***Trollius europæus** L. Page 123.R. Near Stackhouse. *H.***Helleborus viridis** L. Page 124.R. Near Lumb (Little Bank Farm). *H.*L. In a meadow at Wharfe. *MS.***Helleborus foetidus** L. Page 125.R. Near Lumb (Little Bank Farm). *H.*L. At Feizor, abundant. *C.* 'Wild.' *MS.***Aquilegia vulgaris** L. Page 125.L. Winskill Wood, Feizor. *H.**BERBERACEÆ.***[Epimedium alpinum** L. Page 128.

L. Clapham's Botanic Garden at Feizor. *H.* Mr. R. Clapham had a botanic or apothecary's garden at Feizor, from which a number of non-local plants found their way into Mr. Tatham's collection. 'Escapes' from this garden are quite possible.]

*PAPAVERACEÆ.***Papaver somniferum** L. Page 129.C. Lumb Bank, near Heptonstall; *Saml. Gibson*.**Papaver dubium** L. Page 129.

R. 'Ingfield.' *H.* 'Quite unknown here till the house known as *Ingfield* was built, about 1844. After the foundation was dug, the surrounding land was red with it.' *J. T.*

*FUMARIACEÆ.***Corydalis claviculata** DC. Page 131.R. Cockit Moss. *H.**CRUCIFERÆ.***Sisymbrium Sophia** L. Page 136.L. Clapham village (J.G.B.). *H.*

Erysimum cheiranthoides L. Page 137.

R. Near Settle. *MS.*

Cardamine amara L. Page 138.

R. Beggar-wife Bridge. *H.*

Cardamine hirsuta L. Page 128.

R. 'Common.' *H.* and *C.* This is quoted, as well as the next, to show that Mr. Tatham distinguished them as segregates. No dates are given.

Cardamine sylvatica Link. Page 139.

R. Near Settle, 'abundant.' *H.*

Arabis Thaliana L. Page 140.

R. On Castleberg. *C.* No Ribble locality is given in 'Flora.'

Arabis perfoliata Lam. Page 140.

D. Wath-upon-Dearne (no date). *G. P. Nicholson.*

Barbarea præcox Br. Page 141.

R. Langcliffe Lane. *H.*

Armoracia rusticana Baumg. Page 143.

R. Between Settle and Long Preston. *H.*

Draba muralis L. Page 144.

A. Malham Cove (1832). *MS.*

Lepidium campestre Br. Page 149.

R. Ribble Banks. *H.* Settle Churchyard. *MS.*

RESEDACEÆ.

Reseda lutea L. Page 151.

R. Giggleswick. *H.*

VIOLACEÆ.

Viola lutea var. **amœna** Syme. Page 156.

R. Attermire. 'On our hills.' *C.* Specified separately from *lutea* proper. But *amœna* only means a purple-flowered *lutea*, at any rate here, and the distinction is valueless. Wholly yellow flowers, wholly purple ones, and variously intermediate ones—partially yellow and partially purple—are found on the Attermire slopes. I think, however, that the wholly yellow are the first met with on ascending the hill, and that the purple element appears gradually upwards, but without actually prevailing at any level.

DROSERACEÆ.

Drosera rotundifolia L. Page 157.

R. Cockit Moss. *H.* Helwith Moss, given under L. in the 'Flora,' should be under R.

CARYOPHYLLACEÆ.

Silene maritima With. Page 161.

L. Whernside. *J. T.*'s note in his 'Baines.'

Silene Armeria L. Page 162.

L. Ingleton. *C.*

Lychnis vespertina Sibth. Page 162.

R. Near Nappa. *H.*

Stellaria nemorum L. Page 165.

R. New Hall, near Settle. *H.*

Arenaria trinervia L. Page 167.

R. Near the paper mill, Settle. *H.*

HYPERICACEÆ.

Hypericum Androsæmum L. Page 172.

R. Craven Bank Wood. *C.* and *MS.* (= on High Rigg (Craven Bank) a little above the new buildings of Giggleswick Grammar School).

Hypericum hircinum L. Page 172.

R. 'Bank of Ribble a little below the Railway Bridge: August 1855.' *H.* (=below Gildersleets on the road from Settle to Rathmell; *Misses Thompson*).

Hypericum dubium Leers. Page 173.

R. Near Stainforth. *MS.*

MALVACEÆ.

Malva sylvestris L. Page 176.

R. Oustre-bank Wood. *H.*

A. Near Skipton. *C.*

Malva rotundifolia L. Page 176.

R. Giggleswick. *H.* On Castleberg, Settle. *MS.*

GERANIACEÆ.

Geranium sanguineum L. Page 178.

R. 'In most of our woods.' *MS.*

Geranium phæum L. Page 179.

R. Little Bank (W.W.). *H.*

Geranium sylvaticum L. Page 179.

R. 'In all our alpine limestone meadows.' *MS.* Winskill Wood. Swabeck Meadows. *C.*

A. Gordale. *C.*

Geranium pratense L. Page 179.

R. Common. *C.*

[**Impatiens Noli-me-tangere** L. Page 184.

L. Feizor botanic garden. *H.*]

RHAMNACEÆ.

Rhamnus catharticus L. Page 186.

R. 'In all our woods.' *MS.*

SAPINDACEÆ.

Acer campestre L. Page 187.

R. Between Hellifield and Otterburn. *H.*

LEGUMINIFERÆ.

Ulex Gallii Planch. (as *nanus*). Page 188.

L. Near Ingleton.

R. Wigglesworth.

} Both noted by *J.T.* in his 'Baines.'

Undoubtedly *Gallii*, but there are no West Yorkshire specimens. All those in the collection from other parts are really *Gallii* (*J.G.B.*), though all marked *nanus*.

Genista anglica L. Page 188.

R. Cockit Moss. *H.*

Genista tinctoria L. Page 188.

R. Tarn field. *H.* (= Site of Giggleswick Tarn.)

Trifolium medium L. Page 193.

L. Clapham. *H.*

Trifolium arvense L. Page 194.

D. Adwick-upon-Deerne. *G. P. Nicholson.*

Trifolium elegans Savi. Page 195.

R. Beggar-Wife Bridge: 1848. *H.*

Astragalus Hypoglottis L. Page 198.

D. Wath-upon-Deerne. *G. P. Nicholson.* (No doubt near Wath, i.e., upon the Magnesian Limestone 6 or 7 miles distant; *F. A. Lees.*)

Astragalus glycyphyllos L. Page 198.

D. Near Brodsworth. *G. P. Nicholson.*

Vicia tetrasperma Moench. Page 200.

D. 'Very common about Wath, 1836.' *H.*

Orobus tuberosus L. var. **tenuifolius**. Page 203.

R. Lodge Gill. *H.* One specimen has narrow and broad leaves on different stems springing from the same root.

ROSACEÆ.

Prunus insititia L. Page 204.

R. Giggleswick Scars. *C.*

[**Potentilla fruticosa** L. Page 211.

L. Feizor (*W.W.*). R. *Clapham*. Only marked as 'Feizor,' but no doubt either 'Botanic Garden' or a duplicate specimen.]

Comarum palustre L. Page 212.R. Cockit Moss. *H.***Rubus suberectus** Anders. Page 213.A. Near Malham Cove. *MS.*D. Near Newbridge, 1843. *S. Gibson.***Rubus fissus** Lindl. Page 213.C. Carr Green, 1843. *S. Gibson.***Rubus plicatus** W. & N. Page 214.C. Carr Wood, 1843. *S. Gibson.***Rubus Lindleianus** Lees (as *carpinifolius*). Page 214.C. Storer Mill, near Halifax, 1843 (J.G.B.). *S. Gibson.***Rubus rhamnifolius** W. & N. Page 214.C. Near Halifax. *R. Leyland.* With reference to the note in the 'Flora' respecting this record, the specimen has been submitted to Mr. J. G. Baker, but it is found to be too imperfect for identification.**Rubus affinis** Auct. Ang. Page 215.R. Lane at Stackhouse. *MS.*A. Malham Cove. *MS.***Rubus leucostachys** Sm. (as *carpinifolius*). Page 216.C. Near Halifax, Aug. 1837 (J.G.B.). *R. Leyland.***Rubus Sprengelii** Weihe (as *carpinifolius* v. *pulchellus*). Page 218.C. Lew Bank, 1843 (J.G.B.). *S. Gibson.***Rubus Radula** Weihe. Page 219.C. Carr Wood, near Halifax, 1843. *S. Gibson.***Rubus Koehleri** Weihe. Page 219.R. Peart's Crag, Stackhouse Lane. *MS.*C. Near Halifax, Aug. 1837. *R. Leyland.* This Halifax specimen is named *glandulosus*. But 'most likely *Koehleri*' (J.G.B.).**Rubus corylifolius** Sm. Page 221.L. Crow-nest Wood. *MS.*C. Mytholmroyd (as *sublustris*). *S. Gibson.***Rubus cæsius** L. Page 221.R. 'All our woods.' 'Common.' *MS.***Rubus saxatilis** L. Page 222.L. Feizor, &c.—common. *MS.*R. Oustre-bank Wood. *H.***Dryas octopetala** L. Page 224.W. Arncliffe. *H.*North Yorks. Top of Cronkley Fell. *H.*

These are quoted for the sake of a note with the Cronkley Fell specimen—'Supposed to be different from the Arncliffe one, as it flowers later.'

Rosa spinosissima L. Page 225.

- R. Alpine Woods near Settle: June 1833. *H.*
Lynn Gill, 1842. *H.*

Rosa involuta Sm. var. **Doniana**. Page 225.

- L. Ingleton. *H.* Feizor. 'per *R. Clapham*.'

Rosa canina var. **dumetorum** Thuill. Page 228.

- R. Buck Ha' Brow, Stackhouse *H.*

Rosa canina var. **Borreri** Woods. Page 230.

- R. 'Common.' *MS.*
Cave Ha' Wood (as *inodora*). *H.*

Rosa arvensis Huds. (marked '*arvensis*, Anglicè.'). Page 230.

- W. Heselton Gill. *H.*

LYTHRACEÆ.

Lythrum salicaria L. Page 233.

- R. Nappa. *H.* Near Giggleswick. *MS.* Within three miles of Settle. Marked as such, Mr. J. G. Baker informs me, in a catalogue supplied to Mr. Watson.

- A. 'Malham Tarn: J. Tatham'—is entered in the 'Flora of West Yorkshire,' by transcript from Miall and Carrington's 'Flora.' It is strange that no mention of Malham Tarn is found in any of Mr. T.'s own notes, and that there is no specimen in his herbarium.

The only record of the plant for the Tarn is in the M. and C. 'Flora,' and the only authority given is Mr. Tatham's. Professor Miall informs me that it was taken from a *marked list* sent to him by Mr. Tatham. Mr. Walter Morrison, the courteous owner of the Tarn House estate, has favoured me with a letter in which he states that the Purple Loosestrife is well known to him from its beauty on some of the reaches of the Thames, and that he has never seen it at the Tarn. It is not known at the Tarn, either, to his gardener, Mr. T. Coulthard, who is well acquainted with the local plants. Professor Miall himself, and Mr. William West of Bradford, both inform me that they have not met with it in the locality. Mr. F. A. Lees has not seen it there.

I am compelled therefore to the opinion that some mistake was made in connection with the original marked list, and that the species must still be considered as

belonging only to the valleys. Its range is given in 'North Yorkshire' as 0-250 feet. Giggleswick Tarn (see 'Flora of W. Y. '), however, would give it a further extension to between 500 and 550 feet.

ONAGRACEÆ.

Epilobium angustifolium L. Page 234.

R. Near Long Preston. *H.*

HALORAGACEÆ.

Hippuris vulgaris L. Page 239.

R. Cockit Moss, 1843. 'Very fine.' *H.* and *C.*

Myriophyllum verticillatum L. Page 238.

A. Canal near Skipton. *S. Gibson.*

CUCURBITACEÆ.

Bryonia dioica L. Page 241.

D. Fields about Ackworth. *H.*

GROSSULARIACEÆ.

Ribes rubrum L. Page 242.

R. 'Common.' *MS.*

Ribes petræum Sm. Page 242.

A. Gordale. *H.*

The two forms are quoted to show that Mr. Tatham recognised the distinction between them.

CRASSULACEÆ.

Sedum villosum L. Page 244.

A. Between Settle and Kirby Malham. *H.*

[**Sedum album** L. (as *anglicum*). Page 244.

L. Feizor (Botanic Garden) (J.G.B.). *H.* and *MS.*]

SAXIFRAGACEÆ.

Saxifraga hypnoides var. **platypetala** Sm. Page 249.

R. Winskill Wood, 1850. *H.*

Saxifraga hypnoides var. **hirta** Don. Page 249.

R. Near Settle. *C.*

Chrysosplenium alternifolium L. Page 250.

L. Crow Nest Wood. *MS.*

R. Huntworth Gill. *MS.*

A. Janet's Cave. *MS.*

UMBELLIFERÆ.

Cicuta virosa L. Page 252.

- L. Near Wharfe. C. Inconclusive, however. No specimen.
Possibly only noted from Miall and Carrington, who give
'Near *the* Wharfe, Hasling Ford.'

Pimpinella magna L. Page 255.

- R. Giggleswick Scar (W.W.). H. 'Common.' MS. This
increases the range to 550 or 600 feet.

Sium angustifolium L. Page 256.

- R. Near Giggleswick Scar. H.

Æthusa Cynapium L. Page 258.

- R. Gildersleets. H. The Misses Thompson report specimens
there in 1888 four feet in height.

Fœniculum vulgare Gært. Page 258.

- R. Giggleswick. C.

Meum athamanticum Jacq. Page 259.

- R. Near Giggleswick. MS. note in his copy of 'Baines.'

CORNACEÆ.

Cornus sanguinea L. Page 265.

- R. Banks above Settle on the cliff (J.G.B.). H. Limestone
cliffs above Settle. C.

RUBIACEÆ.

Galium boreale L. Page 269.

- R. Peter's Castle. H.

- A. Gordale. Malham. MS.

- W. Near Kettlewell. H. Kilnsay Crag—fine. C.

VALERIANACEÆ.

Valerianella dentata Koch. Page 275.

- A. Malham Cove. MS.

COMPOSITÆ.

Silybum Marianum Gært. Page 277.

- L. Birks, near Clapham. H.

Carduus nutans L. Page 278.

- A. Near Malham Tarn, east end. H.

Carduus acanthoides L. Page 278.

- R. Attermire pastures. H. Langcliffe Lane. H.

Centaurea Scabiosa L. Page 283.

- A. Pontefract. B. Thompson.

Filago minima Fries. Page 289.

R. West of Giggleswick. *MS.*

Gnaphalium sylvaticum L. (as *rectum*). Page 289.

L. Feizor: 1833. *R. Clapham.* Pastures near Feizor. *MS.*

Gnaphalium dioicum L. Page 290.

R. Huntsworth pasture. *H.*

Senecio erucifolius L. (as *tenuiflorus*). Page 292.

R. Near Langcliffe. *H.* Raysack Hill, near Settle. *MS.*

Senecio saracenicus L. Page 293.

L. Ingleton. *H.* Austwick. *MS.*

R. Cammock (Settle). *MS.*

Bidens tripartita L. Page 294.

R. Near New Hall. *H.*

Petasites officinalis Moench. *Planta fem.* Page 298.

R. Ribble banks (W.W.). *H.*

Leontodon hirtus L. Page 300.

R. 'Common.' *MS.* (in his 'Baines'). Probably an error for *hispidus*.

Tragopogon porrifolius L. Page 302 (but not named).

D. Brodsworth. *G. P. Nicholson.*

Taraxacum officinale var. *lævigatum* DC. Page 302.

R. Langcliffe Lane. *H.*

Taraxacum officinale var. *palustre* DC. Page 302.

R. Lodge Gill pastures. *MS.*

Hieracium anglicum Fries. (as *Lawsoni*). Page 306.

R. Hills above Settle. *H.* Catterick and Stainforth. *MS.*

Hieracium anglicum Fries (as *Hypochæris maculata*). Page 306.

R. Attermire Scar (J.G.B.). *H.*

Hieracium Gibsoni Backh. (as *cæsium* var. *bifidum*). Page 307.

R. Giggleswick Scar. *H.*

Hieracium vulgatum Fries., form *maculatum* Backh. Page 309.

R. Giggleswick Scar. *MS.*

Hieracium tridentatum Fries. Page 310.

R. Oustre Bank Wood, 1844 (J.G.B.). *H.*

Hieracium prenanthoides Vill. Page 310.

R. Oustre Bank Wood. *H.*

Hieracium crocatum Fries (as *rigidum*). Page 311.

R. Attermire Scars, July 1848 (J.G.B.). *H.*

Hieracium villosum L. Page 311.

R. Wood above Stainforth. Note in his 'Baines.' Doubtless *anglicum*; see 'Flora.

ERICACEÆ.

Vaccinium Vitis-idaea L. Page 317.

R. Penyghent. Cleatop Park. *MS.*

Arctostaphylos Uva-ursi Spreng. Page 318.

C. Near Heptonstall, May 1829. *R. Leyland.*

Pyrola minor L. Page 321.

L. Clapdale Wood. *R. Clapham.*

A. Wood near Gordale House. C. Wood near Malham.

Note in copy of 'Baines.'

Monotropa Hypopitys L. Page 322.

W. Thorp Arch Woods (no date). *H. Baines.*

APOCYNACEÆ.

Vinca minor L. Page 323.

R. Castleberg. Winskill Wood. *MS.*

GENTIANACEÆ.

Menyanthes trifoliata L. Page 327.

L. Lawkland Moss. *MS.*

R. Lodge. *H.*

CONVOLVULACEÆ.

Convolvulus arvensis L. Page 329.

A. Road between Keighley and Bingley. *H.*

Convolvulus sepium L. Page 329.

R. Giggleswick. *H.*

SOLANACEÆ.

[**Atropa Belladonna** L. Page 322.

L. Feizor (Botanic Garden). *H. and MS.*]

Hyoscyamus niger L. Page 322.

R. Langcliffe Lane. *H.*

SCROPHULARIACEÆ.

Verbascum Thapsus L. Page 333.

R. Tarn Lane. *MS.*

Scrophularia Ehrharti Stev. Page 335.

R. Long Preston. Near Nappa. *MS.*

Linaria vulgaris Mill. status **Peloria**. Page 338.

A. Near Pudsey, Yorkshire, 1844. *H.*

Veronica montana L. Page 341.

L. Cave Ha' Wood. *H.*

Melampyrum pratense var. **montanum** Johnst. Page 346.

L. Near Feizor, &c. *C.*

LABIATÆ.

Lycopus europæus L. Page 349.

R. Beggar-Wife Bridge. *H.* Willow Island (Settle). *MS.*

Mentha viridis L. Page 351.

R. Willow Island. *H.* An escape.

Mentha viridis var. **crispa**. Page 351.

R. Cammock, Settle (J.G.B.). *H.* An escape.

Mentha rubra Sm. Page 352.

R. Willow Island. *H.* Beggar-Wife Bridge [as *gentilis*, but is *rubra*: J.G.B.] *H.*

Mentha arvensis var. **agrestis** Sole. Page 353.

R. Giggleswick. *MS.*

Salvia Verbenaca L. Page 357.

R. Gathered near Settle. *MS.*

Scutellaria minor L. Page 358.

C. Hebden Bridge. *H. Baines.*

Ballota nigra L. Page 359.

L. Near Feizor. *C.*

W. Common about Knaresborough. *MS.*

Galeopsis versicolor Curt. Page 361.

R. Near Lodge. *H.* Settle Ings, 1841. *MS.*

Lamium incisum Willd. Page 363.

R. 'A common weed.' *H.*

[**Teucrium Chamædrys** L. Page 365.

R. Feizor (Botanic Garden). *H.*]

BORAGINACEÆ.

Borago officinalis L. Page 370.

R. Bridle road from Rathmel to Malham. *MS.*

Cynoglossum officinale L. Page 371.

L. Feizor. *R. Clapham.* This appears to be a legitimate wild growth, not a 'Botanic Garden' record, as it is included in Herbarium, Catalogue, and *MS.*

PRIMULACEÆ.

Anagallis tenella L. Page 379.

R. Dub Cote (Horton-in-Ribblesdale). *H.* Cockit Moss. *H.*

CHENOPODIACEÆ.

Chenopodium glaucum L. Page 384.

R. Ribble bank. *C.*

Chenopodium rubrum L. Page 384.

R. Ribble banks. *C.*

POLYGONACEÆ.

- [**Rumex alpinus** L. Page 388.
L. Feizor Botanic Garden. *R. Clapham*].

AMENTIFERÆ.

- Populus canescens** Sm. Page 401.
W. Hesleden Gill. *C.*

CONIFERÆ.

- Juniperus communis** L. Page 409.
R. Moughton: common. *C.*
- Juniperus communis** L. var. **nana** Willd.
R. 'Common.' *C.* Query: only stunted *communis*?

HYDROCHARIDACEÆ.

- Hydrocharis Morsus-ranæ** L. Page 422.
R. Cockit Moss. *C.* If correct, this record would give a range of 500 feet instead of only 0-100 as in the 'Flora.' But Mr. J. G. Baker informs me that its accuracy is most unlikely. Mr. F. A. Lees observes—'Impossible. Utterly opposed to all we know of the Frog-bit. It would not live over the season if put in an open-air pool—could not perfect its winter buds.'

ORCHIDACEÆ.

- Orchis pyramidalis** L. Page 423.
R. Near Langcliffe (J.G.B.). *H.* The full record is—'Miss Swale's field at Langcliffe called "the Stubbins."' MS. notes in 'Baines' stand thus—'Near Settle'; 'Langcliffe.' 'Wath' in the 'Flora' is an error—apparently in transcript. The next species was intended.

- Orchis ustulata** L. Page 424.
D. Wath-upon-Dearne, 1836. *G. P. Nicholson.*

- Spiranthes autumnalis** Rich. Page 431.
D. Near Wath-upon-Dearne. *G. P. Nicholson.* (See *Astragalus hypoglottis*.)

LILIACEÆ.

- Allium oleraceum** var. **complanatum** Bor. Page 447.
R. Castleberg, Settle. *MS.*

CYPERACEÆ.

- Scirpus multicaulis** Sm. Page 454.
R. Tarn field, Giggleswick. *C.*

Scirpus sylvaticus L. Page 456.

R. Littlebank and Scaleberg pastures, Settle. C.

Carex acuta L. Page 464.

R. Lodge, near Anley. C.

Carex rigida Good. Page 465.

R. Fountain's Fell (J.G.B.). H. Fountain's Fell, 1849. MS.

Carex vulgaris Fr. (as *cæspitosa*). Page 465.

D. Near Hebden Bridge. H. See 'Flora,' var. *Idiogynea*.
The Herbarium contains also specimens from S. Gibson.
from this locality, marked var. *dioica*, var. *duplex*, and
var. *chlorocarpa*.

Carex ampullacea Good. Page 474.

R. Ribble bank. C.

Carex vesicaria L. Page 474.

R. Willow Island. C.

GRAMINEÆ.

Phalaris canariensis L. Page 476.

R. Roadside, Settle. C.

Festuca ovina L. forma *vivipara*. Page 489.

L. Ingleborough. H.

'*Ovina* proper and *vivipara* on the same bunch' (J.T.).

FILICES.

Hymenophyllum unilaterale Willd. Page 499.

L. North of Ingleton and Lunesdale. C.

Blechnum boreale Sw. Page 501.

R. Gill near Buck Ha' Brow, Aug. 1849. H.

Athyrium Filix-fœmina a. *rhæticum* Roth. Page 504.

R. Scaleberg pastures. C.

Scolopendrium vulgare Sm. Page 506.

C. Hebden Bridge, 1841. S. Gibson.

LYCOPODIACEÆ.

Lycopodium alpinum L. Page 517.

R. 'Common.' Storthgill. C.

Lycopodium Selago L. Page 518.

L. Ingleborough: July 1849. H.

EQUISETACEÆ.

Equisetum hyemale L. Page 521.

L. Near Sedbergh, 1844. C.

THE ORNITHOLOGY OF TENNYSON.

REV. JULIAN G. TUCK, M.A.,
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As our greatest English poet has recently passed away from us, and has (to quote his own words) 'gone . . . from this room into the next,' it may not be deemed unfitting to offer a tribute to his memory in the pages of 'The Naturalist' by quoting a few passages from his voluminous writings illustrative of bird-life. If the late Poet-Laureate were not an ornithologist in the sense in which many readers of this journal can claim the title, it is impossible to read his poems without recognising in him a keen observer of nature and a lover of birds, especially of the song-birds which can be seen and heard around such an English country home as the Lincolnshire rectory in which Alfred Tennyson was born, and under the roof of which he passed the early years of his life.

Beginning with 'Claribel,' the poem which stands first in most editions of Tennyson's writings, we meet with the lines—

Her song the lintwhite swelleth,
 The clear-voiced mavis dwelleth,
 The callow throstle lispeth.

and in 'Mariana' he alludes to a sound well known to his readers alike in town and country,

The sparrow's chirrup on the roof.

Going on through the group of poems collectively entitled 'Juvenilia' we have the two songs dedicated 'To the Owl.' Did the poet in his school-boy days go bird-nesting, and thus disturb the slumbers of the white owls which lived in the tower of his father's church? Possibly he did, since we read—

Alone, and warming his five wits,
 The white owl in the belfry sits.

In the second of these songs the sonorous cry of the brown owl is splendidly described as

. . . . A lengthen'd loud halloo,
 Tuwhoo, tuwhit, tuwhit, tuwhoo-o-o.

Perhaps the 'Dying Swan' appeals more to the lover of poetry than to the naturalist; but in the 'Miller's Daughter' we have an allusion to

. . . . some wild skylark's matin song,

and also to the dove, which seems to have been a special favourite with the Laureate;

And oft I heard the tender dove
 In firry woodlands making moan.

'Enone' leads us in thought to wilder scenes, but described with no less accuracy ; to

Dark tall pines, that plumed the craggy ledge
High over the blue gorge, and all between
The snowy peak and snow-white cataract
Fostered the callow eaglet.

while the 'May Queen' brings us home again, with its references to birds more or less familiar to most of us ;

The building rook 'ill caw from the windy tall elm-tree,
And the tufted plover pipe along the fallow lea,
And the swallow 'ill come back again with summer o'er the wave.

Everyone who has lived near a rookery, or walked in spring over a farm in search of plover's eggs, and heard the oft-repeated shrill 'pee-wit, pee-e-wit,' must admit the graphic accuracy of these lines. Then, like the owl, the blackbird has a little sonnet specially addressed to him ; his depredations on the summer fruit seem to have been more readily condoned by the poet than by most owners of gardens, from the first two stanzas,

O blackbird ! sing me something well ;
While all the neighbours shoot thee round,
I keep smooth plats of fruitful ground,
Where thou may'st warble, eat, and dwell.
The espaliers and the standards all
Are thine : the range of lawn and park :
The unnetted blackhearts ripen dark,
All thine, against the garden wall.

Describing the fresh beauty of an ideal May morning in the 'Gardener's Daughter,' the poet introduces the chorus of varied bird music ;

From the woods
Came voices of the well-contented doves.
The lark could scarce get out his notes for joy,
But shook his song together as he neared
His happy home, the ground. To left and right
The cuckoo told his name to all the hills ;
The mellow ouzel fluted in the elm ;
The redcap* whistled ; and the nightingale
Sang loud, as tho' he were the bird of day.

St. Simeon Stylites is made to speak of his solitary devotions thus :—

I drowned the whoopings of the owl with sound
Of pious hymns and psalms ;

and in the 'Golden Year' we find the monarch of the bird-world contrasted with one of the smallest subjects of his kingdom ;

Shall eagles not be eagles ? wrens be wrens ?
If all the world were falcons, what of that ?
The wonder of the eagle were the less,
But he not less the eagle.

* Goldfinch or Redpoll.

'Locksley Hall' contains almost in its opening lines a fine piece of word-painting ;

'Tis the place, and all around it, as of old, the curlews call,
Dreary gleams about the moorland flying over Locksley Hall.

As one reads the passage there appears to rise before the eye the lonely gray old house, standing on the 'dreary moorland,' from which the flights of curlews make their way at the fall of the tide to the 'barren shore.' In the same poem comes the well-known allusion to the increased beauty and lustre of the plumage of birds at the vernal season ;

In the Spring a fuller crimson comes upon the robin's breast ;
In the Spring the wanton lapwing gets himself another crest ;
In the Spring a livelier iris changes on the burnished dove ;
In the Spring a young man's fancy lightly turns to thoughts of love.

Any reader of 'Locksley Hall' who has stood waiting for the evening flight of ducks in the fading light of a December day, and has watched the lines of rooks going overhead to their roosting-place in some distant wood, their calls sounding clear through the frosty air, can appreciate the force of the line which mentions

The many-wintered crow that leads the clanging rookery home.

Another description of bird-life on a spring morning is given us in 'Sir Lancelot and Queen Guinevere.'

Sometimes the linnet piped his song ;
Sometimes the throstle whistled strong ;
Sometimes the sparrowhawk, wheel'd along,
Hushed all the groves from fear of wrong.

The 'Poet's Song' introduces us to a musician chanting

A melody loud and sweet,
That made the wild swan pause in her cloud,
And the lark drop down at his feet.

The swallow stopt as he hunted the bee,
The snake slipt under a spray,
The wild hawk stood with the down on his beak,
And stared, with his foot on the prey.
And the nightingale thought, 'I have sung many songs,
But never a one so gay,
For he sings of what the world will be
When the world has died away.'

Allusions to the song of the nightingale are somewhat numerous in Tennyson's writings ; perhaps the happiest of all is that in the 'Grandmother.' This most loveable old lady is represented as telling her little grandchild how some seventy years ago she 'stood by the road at the gate' to meet her lover, when in the still summer evening ;

The moon like a rick on fire was rising over the dale,
And whit, whit, whit, in the bush beside me chirrup the nightingale.

There are few Tennysonian characters better known than his 'Northern Farmer.' The old man, lying on his deathbed, tells his daughter of the improvements he has made in his holding, the chief of which was his having 'stubbed Thurnaby waäste.' Here there was a 'boggle,' or ghost, which had summary notice to quit.

Moäst loike a butter-bump, fur I heerd 'um about an' about,
But I stubb'd 'um oop wi' the lot, an' raäved an' rembled 'um oot.

Mr. Cordeaux, in his 'Birds of the Humber District' (p. 104), gives 'butter-bump' as the provincial name of the bittern, and in 1872 writes of its becoming extinct as a resident 'from forty to fifty years since.' Probably when Tennyson was a boy at Louth Grammar School the booming of the bittern was a familiar sound to him, and the name of 'butter bump' would doubtless have been about 1820 a 'household word' at Somersby Rectory.

The passages in the 'Princess' relating to birds are not many, but most interesting. Hilarion, speaking of his ambition to win the Princess Ida, is made to say,

'The crane,' I said, 'may chatter of the crane,
The dove may murmur of the dove, but I
An eagle clang an eagle to the spheres.'

In this poem is introduced the song to 'the swallow winging south,' and when the voice of the disguised Hilarion sounds rough and coarse in comparison with the tuneful trebles of the 'sweet girl-graduates,' the Princess thus criticises his efforts—

Marsh-divers rather, maid,
Shall croak thee sister, or the meadow-crake
Grate her harsh kindred in the grass.

Hilarion declares that in his boyish days everything spoke to him of her to whom his first love was given :

At eve and dawn
With Ida, Ida, Ida rang the woods;
The leader wild-swan in among the stars
Would clang it.

Perhaps the best comment that could be made on these lines is an extract from Mr. Cordeaux's book, quoted above. He writes (p. 156): 'The cry of the wild swan is extremely wild and musical. Some years ago, during the prevalence of a severe "blast," I saw forty-two of these noble birds pass over our marshes, flying in the same familiar arrow-head formation as wild geese use—a sight not to be forgotten, not alone for their large size and snowy whiteness, but their grand trumpet-notes. Now single, clear, distinct, clarion-like, as a solitary bugle sounds the advance—or the tongue of some old hound, uplifted when the pack runs mute with a breast-high scent; then, as if in emulation of their leader's note, the entire flock would

burst into a chorus of cries, which, floating downwards on the still, frosty air, had every possible resemblance to the music of a pack of foxhounds in full cry—sounds which have doubtless given rise to the legend, common in some form or other to all the northern races, of the demon huntsman and his infernal pack.'

One other passage from 'Princess Ida' may be quoted, referring to the self-destruction of migratory birds against the glass of a lighthouse, a subject to which the Lincolnshire ornithologist mentioned above and others have devoted much careful attention of late years, though at the time (1847) that 'In Memoriam' was first published it had been little thought of.

Fixt like a beacon-tower above the waves
Of tempest, when the crimson-rolling eye
Glares ruin, and the wild birds on the light
Dash themselves dead.

Boadicea, anticipating the avenging of her wrongs, calls on the carnivorous birds to gather around the corpses of her Roman foes :

Bark an answer, Britain's raven! bark and blacken innumerable,
Blacken round the Roman carrion, make the carcass a skeleton,
Kite and kestrel, wolf and wolfkin, from the wilderness, wallow in it.

Very fresh and bright and breezy is 'The Window, or the Song of the Wrens.' The accepted lover, rejoicing in the arrival of a letter containing the answer he has longed for, but hardly ventured to expect, calls on all the birds to share his joy :

Be merry, all birds, to-day,
Be merry on earth as you never were merry before,
Be merry in heaven, O larks, and far away,
And merry for ever and ever and one day more.

Why?

For it's easy to find a rhyme.

Look, look, how he flits,
The fire-crowned king of the wrens, from out of the pine!
Look how they tumble the blossom, the mad little tits!
'Cuckoo! cuckoo!' was ever a May so fine?

Why?

For it's easy to find a rhyme.

O merry the linnet and dove,
And swallow and sparrow and throstles, and have your desire!
O merry, my heart, you have gotten the wings of love,
And flit like the king of the wrens with a crown of fire.

Why?

For it's ay, ay, ay, ay.

Neither 'In Memoriam' nor 'Maud' contain much especially attractive to the ornithologist. The former has allusions to the linnet, the lark, and to 'the distant sea' ;

Where now the seamew pipes, or dives
In yonder greening gleam.

'In Memoriam' also contains the stanza which some years ago gave rise to a correspondence in one of the weekly papers as to the claims of the wheatear* or the kingfisher ;

When rosy plumelets tuft the larch,
And rarely pipes the mounted thrush ;
Or underneath the barren bush
Flits by the sea-blue bird of March.

In the first part of 'Maud' we find the lines—

The May-fly is torn by the swallow, the sparrow is spear'd by the shrike.
And the whole little wood where I sit is a world of plunder and prey.

Coming now to the 'Idylls of the King' which many lovers of Tennyson's poetry consider to be the very crown of his work, and perhaps that by which he will be best known a century hence, we meet with many striking references to bird-life. In the 'Coming of Arthur' the small birds' well-known habit of flying after the cuckoo is alluded to in the King's speech—

I have seen the cuckoo chased by lesser fowl,
And reason in the chase.

A little further on in the same idyll we read—

The swallow and the swift are near akin.

In 'Gareth and Lynette,' when Gareth invokes the 'birds that warble to the morning sky,' Lynette retorts,

What knowest thou of birds, lark, mavis, merle, linnet ?

The heron has mention made of him in the suggestive lines—

Nigh upon that hour
When the lone heron forgets his melancholy,
Lets down his other leg, and stretching, dreams
Of goodly supper in the distant pool.

The next idyll, 'Geraint and Enid,' has a passage of great beauty, in which Geraint is described as hearing Enid, then unknown to him, singing a song, which was to him like a sudden and unexpected burst of music on an April morning, causing the hearer

To think or say, 'There is the nightingale.'

Again, Geraint is represented as

Glancing all at once as keenly at her
As careful robins eye the delver's toil ;

a pretty simile suggested by the robin's well-known habit of waiting in attendance on a gardener when turning over the soil, and bringing worms to the surface.

Dwellers near the few places in which the stone-curlew breeds will be well able to understand Enid's nervous alarm when

The great plover's human whistle amazed
Her heart, and glancing round the waste she feared
In every wavering brake an ambuscade.

See 'Birds of the Humber District,' p. 30.

'Merlin and Vivien' has several allusions to falconry. Queen Guinevere declares her intention to

Ride a-hawking with Sir Lancelot.
He hath given us a fair falcon which he trained,
We go to prove it.

The gift proved well worthy of a Queen's acceptance, when Sir Lancelot

Unhooded casting off
The goodly falcon free ; she towered ; her bells,
Tone under tone, shrilled ; and they lifted up
Their eager faces, wondering at the strength,
Boldness and royal knighthood of the bird
Who pounced her quarry and slew it.

In 'Lancelot and Elaine' the royal sport is introduced again. Elaine asks the Prince :

'Why slight your king,
And lose the quest he sent you on, and prove
No surer than our falcon yesterday,
Who lost the hern we slipt him at, and went
To all the winds?' 'Nay, by mine head,' said he,
'I lose it, as we lose the lark in heaven,
O damsel, in the light of your blue eyes.'

Elaine, in another part of the idyll is likened to

A little helpless, innocent bird,
That has but one plain passage of few notes,
Will sing the simple passage o'er and o'er
For all an April morning, till the ear
Wearies to hear it.

Either the chaffinch, greenfinch, or yellow bunting might be the bird referred to. Again, when the short life of the 'lily maid of Astolat' is nearing its close :

Death, like a friend's voice from a distant field
Approaching thro' the darkness called ; the owls
Wailing had power upon her.

We have in the 'Last Tournament' a spirited passage, introducing with noteworthy accuracy two well-known birds. Tristram, addressing Isolt, is made to say :

Worldling of the world am I, and know
The ptarmigan that whitens ere his hour
Woos his own end ; we are not angels here,
Nor shall be : vows—I am woodman of the woods,
And hear the garnet-headed yaffingale*
Mock them.

Most lovers of wild birds are fond of the lintwhite or linnet, and the late Laureate seems to have been no exception. The few quotations here culled from his works may fitly conclude, as they began, with a mention of that charming little bird. The lines are from the novice's conversation with the Queen in 'Guinevere' :

* Green woodpecker.

Himself beheld three spirits mad with joy
 Come dashing down on a tall wayside flower,
 That shook beneath them, as the thistle shakes
 When three gray linnets wrangle for the seed.

The passages given above were nearly all found marked in a then complete edition of Tennyson's works published in 1878 ; within the last few years a small volume has been published, ending with the now familiar 'Crossing the Bar.' This contains the 'Progress of Spring,' which is, as might be expected, rich in allusions to summer birds.

Up leaps the lark, gone wild to welcome her,
 About her glance the tits, and shriek the jays,
 Before her skims the jubilant woodpecker,
 The linnet's bosom blushes at her gaze,
 While round her brows a woodland culver* flits,
 Watching her large light eyes and gracious looks,
 And in her open palm a halcyon sits
 Patient—the secret splendour of the brooks.
 * * * * *
 Now past her feet the swallow circling flies.
 A clamorous cuckoo stoops to meet her hand.
 * * * * *
 The blackcap warbles, and the turtle purrs,
 The starling claps his tiny castanets.

It must not be thought that the quotations here given contain all the allusions to our British birds in the Laureate's works. The writer of this paper has not all the published writings of Lord Tennyson at hand for reference, and the reading of the latest poems, published during the last ten days, is to him a pleasure to come. It may safely be said that any one who chooses to explore the rich literary mine which the late Laureate has left open for his countrymen will find many others for himself ; but possibly some of those given above may be new to many readers of the 'Naturalist,' and interesting, since every one of the birds mentioned (with the possible exception of the ptarmigan) has been met with in one or other of the counties enumerated on the cover of this journal, and the majority of them breed annually in the North of England. Nor does it come within the aim of this paper to speak in laudatory terms of the great poet's life and work ; that has been done already in pulpit and press by some of the ablest tongues and readiest pens in the land, and will be done again and again 'far on in summers that we shall not see.' But should it be the means of leading even one reader to peruse his Tennyson with fresh or renewed interest, it will not have been written, or, perhaps it should be said, compiled, in vain.

All Hallowstide, 1892.

* Wood Pigeon.

In Memoriam.

T. J. MOORE.

THE death of Mr. Thomas John Moore, C.M.Z.S., A.I.S., curator of the Liverpool Museum, which occurred on the last day of October, takes from amongst us one of the kindest and most genial of men and a most devoted public servant.



T. J. Moore

For more than 40 years Mr. Moore spared himself neither time nor labour in building up and utilising for the instruction of the public and the advancement of science the magnificent collections that have placed the Liverpool Museum in the front rank of provincial museums. Other museums there are of older date, but in

their now recognised position as free places of interest and instruction for the public the Liverpool Museum has practically been the pioneer of museums in the provinces, and from its very inception Mr. Moore has been the curator of it. The great care and knowledge displayed in its arrangement, and the foresight, skill, and inventive faculty manifested in the cases and fittings are the best testimony to the unwearied energy and marvellous ability of its curator.

In speaking of himself, Mr. Moore said:—‘ My life has been a specially quiet, simple, and uneventful one. I have served but three masters—the Zoological Society of London; Edward, thirteenth Earl of Derby, at Knowsley; and the Corporation of Liverpool, and this in unbroken sequence.’

Mr. Moore was born in London, in 1824. His father was a Norfolk man, and soon after his marriage obtained an appointment on the staff of the Zoological Society. Here from his early childhood his son became a careful observer of animals, living and dead, and acquired that love for the study of Natural History that remained with him and increased with increasing years. Here, too, in his youth, he made the acquaintance of Gould—who was curator to the Zoological Society—, Waterhouse, Martin, and other naturalists of repute who were then on the staff. In 1843 he received and accepted the offer of an appointment, under Lord Derby, as assistant to Mr. Thomson, Superintendent of the menagerie and aviary of that nobleman at Knowsley, where Lord Derby had devoted a hundred acres of land and as many of water to the well-being and comfort of the magnificent collection of mammals and birds that he had got together from all parts of the world, besides a well-stocked museum of stuffed and mounted specimens inside Knowsley Hall. For eight years Mr. Moore remained at Knowsley, surrounded by unrivalled opportunities for the study of Natural History, and that he availed himself fully of these opportunities the Liverpool Museum sufficiently shows. The advantage of being thus placed, where a careful study of the living forms and habits of animals could be made, is well seen in the life-like attitudes of form and grouping which so pre-eminently characterise the stuffed specimens in the Liverpool Museum.

On the death of the Earl of Derby, in 1851, his collection of stuffed specimens and skins was offered to the Corporation of Liverpool on condition of its being maintained for public use. The offer was accepted, and an Act of Parliament obtained authorising the establishment of a Museum and Library in Liverpool. The Museum was first opened in Duke Street, Mr. Moore being appointed Curator, and under his superintendence the Derby

Collection, which numbered over 18,000 birds, 1,200 mammals, and 300 reptiles and fish, the greater part of which were stuffed, were removed from Knowsley to their new quarters in Liverpool to be freely available evermore for the use and instruction of the public. The work of arranging and labelling a collection of this magnitude was sufficient, one would have thought, to satisfy for a long time the desires of the most energetic, but Mr. Moore never wearied in his endeavours to form a museum illustrative of the entire animal kingdom and commensurate with the high position in wealth, intelligence, and population of the town of Liverpool. The result was that in a few years the collections had so grown as to require greatly increased accommodation, and this was found for them by the late Sir William Brown, of Liverpool, who, in 1860, erected at his sole cost, the Library and Museum building which stands on a site in the street bearing his name, and is known to visitors from all parts of the globe. The history and development of the Liverpool Museum is practically the history of the life and work of Mr. Moore, for never had any institution a more zealous and enthusiastic worker at its head, nor one whose manner was more likely to gain friends and helpers to its cause. Mr. Moore fully recognised how greatly the museum would be benefited if the large mercantile marine of the port could be sufficiently interested in its work to avail themselves of the splendid opportunities they had of collecting marine specimens on their varied and extended voyages. He quickly imparted some of his own zeal to the captains of merchant ships, and he published for their use a pamphlet of suggestions pointing out how best to obtain and preserve marine animals, both living and dead, also providing dredges, nets, and preservatives, for use on board ship. The Literary and Philosophical Society of Liverpool furthered his efforts by conferring the keenly appreciated honour of associate member on those captains who carried out the suggestions and made collections for the museum. This produced a commendable spirit of rivalry, which resulted in great advantage to the museum and a considerable addition to its collections. Amongst the methods used for importing living fish was a glass vessel, which obtained the name of the 'Mortimer Fish Globe,' on account of its very successful use by Captain Mortimer in the first instance, and afterwards by other captains in bringing living fish from various foreign places, and this globe is likely to become historical from the later important use to which it has been applied. It consists of a round globe with a wide opening at the top, the base resting on a circular piece of wood, from which a number of cords passed upwards and were joined together on a ring above the mouth of the

jar. The jar could be hung up by this ring so as to swing freely with the motions of the ship without any friction, and its contents could always be under observation, thus making it a source of interest and attraction to the captain and others on board. There was much less likelihood of the contents being thrown out than would have been the case if it had rested solidly on the ship, and doubtless the motion of the water was better suited to the well-being of the fish than if it had been still. At any rate experience has proved that up to the present this has been the most successful means of transporting living fish on long voyages, and Mr. Moore by its means was enabled to accomplish the task, previously attempted in vain, of sending living soles to America for the purpose of acclimatising them to American seas. Dr. Spencer Baird, who was very desirous of introducing some of our British food fishes into American waters, had sent a special commissioner to England to carry out this object, and 700 soles were sent in tubs, but only three arrived alive in America, and after other efforts had been made and had failed, Mr. Moore was appealed to. He sent a number of the Mortimer Fish Globes each containing four soles, and with scarcely a fatality in the whole series the soles arrived alive and well in America, these being the first that had survived the transatlantic voyage. Mr. Moore also tried to acclimatise the American Clam (*Venus mercenaria*), to our coasts, and laid down a number of living specimens in the Mersey, but not with any decided success.

But not only was he successful in enlisting the services of sea captains for the museum, but many travellers and sportsmen undertook, at his request, to obtain specimens for the museum, and many rarities were added in this way. One of these deserves special mention, on account of its striking appearance and great rarity in collections. This is the Rocky Mountain Goat, which was specially obtained for the museum by Mr. St. George Littledale, and an interesting paper on it was read by Mr. Moore to the Liverpool Literary and Philosophical Society, and published in their proceedings.

It was my good fortune to be associated with Mr. Moore, as principal assistant in the museum, for seven years, and I have always retained for him feelings of sincere regard and affection. His kindness of heart and intensely sympathetic nature, together with his ever ready help in promoting the comfort and welfare of those associated with him, endeared him to all the staff, all of whom felt it a pleasure to carry out his wishes. Mr. Moore was a man of untiring energy, and he would continue at any work he had in hand without any regard, for the time being, to the desirable calls for

bodily sustenance, and I have repeatedly been with him working in the museum until the small hours of the morning. This, no doubt, had its effect on his health in due course, or we should not have lost, before even he had reached the years of threescore and ten, a man of his vigorous constitution. He had a wide and deep general knowledge of the animal kingdom, but was in no sense a specialist, though probably as a result of his training and vocation he was more intimately acquainted with the mammalia than any other class of animals. With a museum covering such a wide range as the Liverpool Museum it would have been thought that specially trained assistants were necessary, but this he never had, preferring rather to take youths into his service to learn their work with him.

In one respect, however, most valuable aid was given him and help that he was always most anxious should be fully recognised. This was by the Rev. H. H. Higgins, M.A., who for more than thirty years has given his spare time and labour ungrudgingly, and one might almost say lovingly, to the work of arranging, illustrating and describing the series of invertebrates which fill the twenty table cases that occupy the floors of the upper rooms of the museum, besides in many other ways interesting himself in the welfare of the museum. Mr. Moore was always ready to assist in any and every way students and scientists who wished to make use of the Liverpool Museum, but he had not, unfortunately, the pen of a ready writer, so that his contributions to literature are but scanty. But many notes of high scientific value were contributed by him to the Literary and Philosophical Society's Proceedings and other local publications. In one of these, on the Rocky Mountain Goat, I have already referred, and next in importance to this was a paper on Hybrids among Pheasants, also published in the Literary and Philosophical Society's Proceedings. He was for some time President of the Liverpool Marine Biology Committee, and published in their Report for 1889 an account of the Seals and Whales of the Liverpool District. In the earlier days of the museum the naturalists of Liverpool published a Naturalists' Scrap Book, to which Mr. Moore was a frequent contributor, and recorded the occurrence of several species new to the district, including Johnston's Hump-backed Whale (*Megaptera longimana*); Pallas's Sand Grouse in Cheshire in 1863; the Twaite Shad (*Alosa vulgaris*); Opah or King Fish (*Lampris guttatus*); Short Sun Fish (*Orthogoriscus mola*); Angel Fish (*Squatina angelus*); *Eledone cirrhosus*; *Portunus arcuatus*; *Argulus foliaceus*; *Pherusa mulleri*, and several others. His name has been given to two species, *Delphinus moorii*, described and figured by Dr. J. E. Gray in

the Proceedings of the Zoological Society, 1865, p. 736; and *Murænichthys moorii*, described by Dr. A. Günther in 'Catalogue of Fishes,' vol. 8, p. 53. He was for many years a Corresponding Member of the Zoological Society, and quite recently was elected an Associate of the Linnean Society.

I cannot do better than close this notice by an extract from a short reminiscence of himself that appeared in a Liverpool paper about two years ago, which gives us not only a good insight into his character, but also shows that when he did write he could do so with a good deal of literary skill and charming felicity of expression. 'It will thus be seen that my life has been, as I said at the outset, a quiet and uneventful but busy one. It has also been a happy one. I have been happy in my work, lessened only by my inability to accomplish more; happy in my business associates, and with friends of kindred tastes; very happy when seals or whales have ventured sufficiently near to Liverpool to allow of my making their personal acquaintance, as I have done with some half score of them. Happier still when once on a time I was called from my mid-day chop to inspect a collection of Dodo bones, which I bagged for the museum before I finished that chop, and sorted and matched and named before I supped at two in the morning. Happiest of all when Sir J. Pope Hennessy, in March 1879, exhibited to me and a select circle of friends at the museum a living baby hippopotamus from Liberia, the first of its kind—living or dead—ever brought to Europe, and which sat for his photograph with all gravity (see the "Graphic" of that year). I am undecided in my mind, however, whether that happiness was not equalled, or even excelled, in June 1876, on supping at Eberle's Hotel with Pongo, the gorilla, and his friends and importers, eminent German men of science from the Gaboon on their way to Berlin, and who had previously given me an interview with him as recorded in the "Times," and who were good enough to bring him to the museum to see his splendid stuffed relation, then recently presented to us by Mr. Henry Duckworth, of this city. That *was* a day!'—E. HOWARTH.

NOTES AND NEWS.

We have received from the author (Rev. W. H. Painter) a carefully compiled account of 'The Botany of Biddulph and the Neighbouring Parts of North Staffordshire.' The paper is a reprint from the 'Midland Naturalist,' and deals with three districts: the Valley of Biddulph, the Valley of the Trent, and the Rudyerd Basin. The total number of plants mentioned is 389, and a curious and interesting feature of the paper is a list of several common plants which the author has not yet seen in this part of the county, and which he believes to have become extinct. Under this category come such common plants as *Erophila vulgaris*, *Silene cucubalus*, *Potentilla anserina*, *Epilobium palustre*, etc.

NEW BRITISH WORMS.

REV. HILDERIC FRIEND, F.L.S

I RECENTLY received a consignment of earth-worms from the neighbourhood of Bangor, which contained, in addition to some species new to Wales, one which is new to Britain, and probably to science also. I have named it *Allurus tetragonurus*, and my reason may at once be assigned. In 1874 Dr. Gustaf Eisen published in the *Öfversigt af Kongl. Vetenskaps-Akad.*, No. 2, a paper on New England and Canadian Worms, in which he described, among others, a tiny species from Niagara, which he regarded as the type of a new genus. The genus he named *Tetragonurus* or the quadrangular-tailed, and supplied the following diagnosis:—

‘Body cylindrical in front, quadrangular behind. Male pores on segment 11 [= the 12th segment according to our method of reckoning]; setæ in approximate pairs. Lip or prostomium not dividing the first ring or peristomium. It comes nearest to the genus *Allurus*, from which, however, it is distinguished by the position of the male pore, which in *Allurus* is on segment 12 [= 13 in English], but in *Tetragonurus* on 11 [= 12], as well as by the lip failing to cut into the buccal segment or peristomium.’

Eisen next supplies the specific details of *Tetragonurus pupa*. ‘Lip or prostomium small, acuminate in front, pallid, not dividing the peristomium. Male pores small, but conspicuous. The girdle prominent, usually composed of five segments, viz., 17-21 [= 18-22]. *Tubercula pubertatis* conspicuous, three on each side of the girdle, occupying the 18th, 19th, and 20th segments [= 19, 20, 21]. About 40 segments in all; length about 25 mm.’ Some Swedish comments are added, from which, in addition to the foregoing facts, we learn that there are only ten segments between the male pore and the first body segment; the tubercula are in the form of a wart-like prominence or keel, extending over three segments; the girdle is well-marked and easily distinguished from the adjoining portions, and stretches over five segments, one of which is before and the other behind the segments bearing the tubercula; the colour is sienna brown, becoming light red on the back part. The worm closely resembles *Allurus*, to which it approaches more nearly than to any other, if one has regard to the living form; while it also frequents similar habitats, namely, such places as lie near to water.

Eisen supplied an illustration with his diagnosis, but thus far I have found no one who has discovered the worm elsewhere. Early this year I took a form in the South of England which I thought would prove identical therewith, but some leeches devoured all my specimens on the journey to the north. I have now to describe the worm from Bangor, which very nearly resembles Eisen's species in some respects, though it is abundantly distinct therefrom in others. For the specimen I am indebted to Rev. Mr. Shankland, of Rhyl.

Allurus tetragonurus Friend, is one and half inches in length, somewhat cylindrical before, quadrangular behind and tapering from the girdle towards each extremity, so that the hinder part of the tail is only half the diameter of the girdle. The girdle is very prominent, of a yellowish orange colour and closely fused, so that the segments are made out with difficulty. The fore part of the body is sienna brown, the hinder part a dull yellow-brown, closely resembling the light variety of *Allurus* (*A. luteus* Eisen, not *A. flavus* Friend). Total number of segments, about 85. The head is very small and does not cut the first segment; the male pores are also very small and inconspicuous, but are certainly situated on segment 13 as in other species of *Allurus*, and not on the 12th as in Eisen's *Tetragonurus*. The position of the male pores is a splendid guide to genera, but the attachment of the head or prostomium to the first segment is so variable that it cannot be relied upon. I have shown this in connection with a small Dendrobæne which was formerly called *Lumbricus eiseni* Levinsen, but which at present stands closely related to the tree-worms.

The question now remains—Did Eisen make a mistake about the position of the male pore? I dare not insinuate such an idea, because with the exception of Rosa we have no foreign authority who can compare with him in accuracy of observation. For the present, therefore, we must assume that we have two worms which are practically identical in every respect (length or number of segments being no criterion) except in the position of the male pore, which in our British species is on the 13th segment and so ranks it with *Allurus*, but in America is on the 12th and so constitutes a new genus named *Tetragonurus*. If this is a fact, it must have a meaning, and it will be interesting to observe how future research will enable us to decide the question. Meanwhile it is very pleasant to be able to add a new species to our indigenous list, if not to the records of science. The tabular view of the two worms which I append will show at a glance the differences and similarities existing between them. No. 1 represents *Tetragonurus pupa* Eisen; No. 2 stands for *Allurus tetragonurus* Friend.

No.	Segments occupied by			Total Segments.	Length.	Colour.
	Girdle.	Tubercula.	Male Pore.			
1	18-22	19-21	12	40	25 mm.	Brown.
2	18-22	19-21	13	85	30 mm.	Brown.

A batch of worms sent me by Mr. Trumbull, L.R.C.S., from Malahide, Dublin, in November contained a worm which I took at first to be the same as the foregoing. I now find it to be a new species of *Allurus*, possessed of a very long tail. I have named it *A. macrurus*, and am giving a description in a forthcoming issue of the 'Transactions of the Royal Irish Academy.' A new form of tree-worm from the same locality must at present be referred to the Celtic worm, *Allolobophora celtica* Rosa, var. *rosea* Friend. For fuller details the reader is referred to this month's 'Essex Naturalist.'

NOTE—MAMMALIA.

Otter at the Mouth of the Humber.—I much regret to record, at a time when many of our most interesting population in fur and feather are verging on extinction, that a fine dog Otter (*Lutra lutra*), weighing 21 lbs., was shot at daybreak on Dec. 9th, when running in the long grass near the Humber side of the Spurn, not far from Kilnsea. It had doubtless come up from the river to meet its fate immediately on landing.—JOHN CORDEAUX, Eaton Hall, Retford, 11th Dec., 1892.

NOTES—ORNITHOLOGY.

Manx Shearwater at Sykehouse near Halifax.—A few days since a fine specimen of the Manx Shearwater (*Puffinus anglorum*) was picked up exhausted, but alive, by Mr. James Sewell at Sykehouse, and is now in the possession of Mr. James Peel, taxidermist, Greetland, Halifax.—C. C. HANSON, Greetland, Nov. 10th, 1892.

Flamborough Bird-Notes.—A change in the weather would be a grand thing for the birds. The poor things are having a severe time of it this season, owing to the continual hard frost and the many northerly storms which brought several species from the far north. On Jan. 2nd an Iceland Gull (*Larus leucopterus*) was shot at the North Landing. To-day (Jan. 11th) I observed a pair of Glaucous Gulls (*L. glaucus*) passing over the headland. On Jan. 7th, eleven Swans (*Cygnus sp.*) passed over the headland making for the sea. The sea birds, i.e., the Guillemots (*Lomvia troile*) have arrived in large numbers along the coast. The other day a boy brought me a Lapland Bunting (*Calcarius lapponicus*) which he had caught in a snare. Another one was shot—they are very scarce in this neighbourhood. I am informed of two Goldfinches (*Carduelis elegans*) having been shot; they are also very scarce. A great many Woodcocks (*Scolopax rusticola*) have fallen to the gun; I have also heard of some being caught in a nearly perishing condition this severe weather.—MATTHEW BAILEY, Flamborough, Jan. 12th, 1893.

NOTE—FUNGI.

Castle Howard Fungi: A Correction.—In the list of Fungi collected at the Castle Howard and Malton Forays, published in 'Naturalist,' Dec. 1892, p. 365, *Sporodinia asperigillus* Schröt., is entered for Castle Howard; and *Sporodinia dichotoma* Corda, for Welham Park. These two names are synonyms, and were entered by an oversight.—CHAS. CROSSLAND, Halifax, Dec. 17th, 1892.

NOTE—BOTANY.

Inula helenium in Furness.—In the December (1892) number of this journal Mr. Lister Petty states that since my grandfather, Mr. Atkinson, recorded the occurrence of *Inula helenium* in the neighbourhood of Dalton-in-Furness, no one has seen a single plant there. I may, however, say that I distinctly remember, when a boy, seeing a plant in bloom within a mile or two of Dalton. It was by the side of an occupation road, in a hollow caused by removing gravel for the purpose of repairing the road.—E. T. BALDWIN, 88, St. James' Street, S.W.

NOTE—LEPIDOPTERA.

The supposed Scarborough specimens of *Liparis monacha*, etc.—It is unfortunate that the record of the melanic and other specimens of *Liparis monacha*, exhibited by Mr. J. A. Clark at the meeting of the Entomological Society of London on November 2nd last, has this month found its way into 'The Naturalist' (page 24). At the time Mr. Clark was breeding these specimens, he was under the impression that their parents had been captured at Scarborough, and in that belief, a full page plate of the varieties, accompanied by an explanatory paper by Mr. Clark, appeared in the 'Entomologist's Record' of October 15th last. On seeing the plate and paper, knowing that *L. monacha* was not known to occur at Scarborough at all, I was at once convinced that a serious mistake had occurred somehow, and as the melanic specimens represented the well-known Continental variety *eremita* of the species, I had a strong suspicion as to what was the real origin of the specimens. Accordingly I wrote to my friend, Mr. J. H. Rowntree, of Scarborough, telling him my suspicion, and requesting him to kindly investigate the matter. This he very promptly did, the result proving exactly as I had anticipated, that the melanism was not only not Yorkshire, but not even British. On acquainting Mr. Clark with the result of our investigations, he at once probed the matter to the bottom on his own account, and having satisfied himself he had been totally misled, published an explanatory note in the November number of the 'Entomologists' Record,' which was followed in the December number by a note from each of the dealers through whom the specimens had been procured, both of them admitting that the eggs which had produced the moths had been obtained from a cross between an ordinary specimen taken in the New Forest and a Continental example of the variety *eremita*.

From the report of the same meeting too, one would suppose that the beautiful specimens of *Arctia lubricipeda* var. *radiata*, exhibited on behalf of Mr. John Harrison, of Barnsley, were Yorkshire specimens, whereas Mr. Harrison obtained their parents from Lincolnshire.

The remarkable melanic varieties of *Boarmia repandata* from Sheffield, exhibited on behalf of Mr. A. E. Hall at the December meeting (Nat., p. 24), were the same form which I took at Huddersfield in 1887, and the form I exhibited at the meeting of the Entomological Society of London in February 1889 (Nat., 1889, p. 100). It is interesting to find this grand variety occurs also at Sheffield, and no doubt when looked for it will turn up in other parts of the West Riding, and probably in similar localities in Lancashire.—GEO. T. PORRITT, Huddersfield, Jan. 2nd, 1893.

BIBLIOGRAPHY:

Papers and Records published with respect to the Natural History and Physical Features of the North of England.

MAMMALIA, 1889-1891.

THE present instalment of Bibliography has been compiled and edited by

WM. DENISON ROEBUCK, F.L.S.

Previous instalments of the Bibliography of this group of animals have appeared as follows:—

For 1884, in 'Naturalist,'	February, 1885,	pp. 152-156.
„ 1885, „	August, 1886,	pp. 239-241.
„ 1886-7, „	April, 1889,	pp. 115-127.
„ 1888, „	August, 1891,	pp. 253-259.

The intent of these bibliographical citations is to give a complete series of references to books, papers, and records which have been printed or published with regard to the ten northern English counties and the Isle of Man, and to indicate the gist of the contents of each in as concise a form as may be consistent with making these papers of interest and of value to persons engaged in geographical natural history work. In the case of long lists or papers, the very briefest indications only are given, reference to the original work or paper being necessary. In the case of short records, however, the convenience of the user of the bibliography necessitates the giving of fuller detail and the name of every species included, or even by giving the whole substance (destitute of verbiage) to obviate the necessity of further reference. No apology need be given for giving matter of this kind in 'The Naturalist'; it may not be of interest to casual readers, but to actual workers it will be of decided use.

ANON. [not signed].

Linc. N.

Capture of a Whale [20 feet long, on foreshore at Bennington near Boston, 'a few days ago'; species not named]. Land & Water, Aug. 4th, 1888, 132.

ANON. [not signed].

York N.E.

George Markham Tweddell [with footnote that in 1535 a 'sea-man' (probably a Seal—*Phoca vitulina*) was captured at Skinningrove, and kept many weeks on raw fish, but escaped to the sea; and it is added that visitors to Hull Trinity House Museum will remember seeing relics there of another 'sea-man']. Yorksh. Genealogist, Part 14, Jan. 1889, Vol. 2, p. 12.

ANON. [signed 'Borderer'].

Furness, Cumberland.

Marten [*Mustela martes*] in the Lake District [a fine female trapped at Seathwaite Tarn, near to Coniston Old Man; the species described as now extremely rare, but found occasionally about Dow Craggs and Seathwaite Tarn, and also in the Scafell district]. Field, March 23rd, 1889, p. 422.

- ANON. [not signed]. Notts.
White Hares [*Lepus europæus*] in Notts [repeating records of three instances from the Zoologist]. Land and Water, Ap. 6th, 1889, p. 442.
- ANON. [signed 'Boss']. York N.W.
Otter Hunting in Wensleydale [killing *Lutra* near Cover Bridge, near Middleham, and at Burton Beck]. Field, June 1st, 1889, p. 777.
- ANON. [signed 'Stormer']. Cumberland, Furness, Lanc. W.
The Kendal Otter Hounds [killing examples of *Lutra* at Grimeshill, on the Lune, in Coniston Lake, and in River Irt at Holmrook]. Field, June 1st, 1889, p. 776.
- ANON. [signed 'Falcon']. Northumberland S.
Otter Hunting in the Tyne [at Riding Mill, and Harbottle Island]. Field, June 15th, 1889, p. 847.
- ANON. [signed 'Ragman']. Furness, Cumberland.
The Kendal Otter Hounds [in pursuit of *Lutra lutra* at Broughton-in-Furness, Eskdale, and Coppleshaw Moss]. Field, June 15th, 1889, p. 846.
- ANON. [signed 'The Border Tyke']. Cumberland.
The Carlisle Otter Hounds [and *Lutra* near Wetheral, Armathwaite, etc.]. Field, July 20th, 1889, p. 100. [At Wreay on the Petteril]. Field, Aug. 17th, 1889, p. 240. [On the Esk at Longtown]. Field, May 23rd, 1891, p. 770.
- ANON. [not signed]. Linc. S.
Otters [*Lutra lutra*] on the Welland [one weighing 21 lbs. shot near Deeping St. James, and five seen at Uffington Springs]. Land and Water, Sept. 14th, 1889, p. 339.
- ANON. [not signed]. Lanc. S.
Ancient Red-deer [*Cervus elaphus*] **Horns** [found in the old bed of the Irwell during the Manchester Ship Canal excavation]. Land and Water, Oct. 26th, 1889, p. 544.
- ANON. [signed 'Ed.']. York N.E.
Large Rats [(*Mus decumanus*); one weighing 28 lbs., and 23 inches long, caught Aug. 1881, at Geo. Edson's, Malton]. Field, Dec. 28th, 1889, p. 906.
- ANON. [not signed]. York N.W., Northumberland S.
List of . . . Donations to the Museum [at Newcastle] . . .
 from Aug. 10th, 1888, to July 1st, 1889 [*Sciurus vulgaris* from Cotherstone; skeleton of *Mus decumanus* with abnormal teeth, Carr's Hill, Whitfield; and large do. from Callerton]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. 10, part 2 (1890), p. 312.
- ANON. [signed 'Secretary']. Lanc. S.
Penketh Field Club [*Mustela erminea*, *M. vulgaris*, *Mus decumanus*, on a keeper's gibbet near Bold Park]. N.H.J., March 15th, 1890, xiv. 30.
- ANON. [not signed]. York S.E.
Ancient Relics: British and Roman [at Skipsea, in the Cliff, where remains of Red and Fallow Deer (*Cervus elaphus* and *C. dama*) are found; see Poulson]. Yorksh. Notes and Queries, part 19, April 1890, p. 270.
- ANON. [not signed]. Isle of Man.
Phenological Observations [in the Isle of Man; Common Bat (? *Vesperugo pipistrellus*) appears, Feb. 17th; Manx close season for Hares (*Lepus timidus*) begins, Feb. 1st]. Yn Lioar Manninagh, No. 5, April 1890, p. 161.
- ANON. [not signed]. York S.W.
Genealogical Notes from Wakefield Manor Rolls [Ric Thornhill pardoned for taking a Stag (*Cervus elaphus*) in Saltonstall, 1274]. Yorksh. Notes and Queries, Part 19, April 1890, p. 299.

- ANON. [signed 'R.T. (Edlingham, Alnwick, Northumberland)']. **Cheviotland.**
Albino Moles [(*Talpa europæa*) trapped on Edlingham Farm near Alnwick, one last year, four this]. *Field*, April 5th, 1890, p. 500.
- ANON. [signed 'C.P.']. **Notts.**
Rat [*Mus decumanus*] -**Catching [at Oxton]**; account of dexterous capture of a large number]. *Field*, April 5th, 1890, p. 504.
- ANON. [signed 'Dyer']. **York N.E.**
Sir C. Legard's Otter Hounds [accounting for several *Lutra* in the Derwent at Forge Valley]. *Field*, May 10th, 1890, p. 665.
- ANON. [Newspaper paragraph]. **Cumberland.**
The West Cumberland Otter Hounds [in the Egremont district; *Lutra* in the River Calder]. *Field*, May 24th, 1890, p. 746. [At Maryport and Arkleby]. *Field*, May 31st, 1890, p. 810.
- ANON. [signed 'Th' Little Owd Chap']. **Cumberland.**
The Kendal (Mr. Tattersall's) Otter Hounds [in Eskdale, Cumberland; sport with *Lutra lutra*]. *Field*, May 31st, 1890, p. 810.
- ANON. [signed 'Th' Little Owd Chap']. **Lanc. W., Lanc. S., York Mid W.**
Mr. Tattersall's (The Kendal) Otter Hounds [at Halton near Lancaster; a dog otter (*Lutra lutra*) 17 lbs. killed]. *Field*, July 26th, 1890, p. 146. [On the Ribble and Hodder at Brungerley and Grindleton Bridges; bad weather; *Lutra* not seen]. *Field*, Aug. 30th, 1890, p. 357. [At Mytton Bridge near Whalley and up the Hodder to Whitewell; a 15 lbs. *Lutra* killed]. *Field*, September 20th, 1890, p. 441.
- ANON. [signed 'Ardaros']. **York N.W.**
Mr. Wilkinson's Otter Hounds [in pursuit of *Lutra* in Wensleydale; sport at Jervaulx Abbey, Bolton Woods, and in Burton Beck]. *Field*, June 7th, 1890, p. 850.
- ANON. [signed 'J.R.B.']. **Cumberland.**
Cat suckling Leveret [= young *Lepus europæus*, at Egremont, Cumberland]. *Field*, June 7th, 1890, p. 852.
- ANON. [signed 'Viator']. **York N.E. and S.E.**
Sir Charles Legard's Otter Hounds [and their success after *Lutra* in the Rye and Derwent; a kill near Howe Bridge]. *Field*, June 14th, 1890, p. 874. [After *Lutra* on the Costa at Howe Bridge, near Pocklington, and on the Rye and Derwent]. *Field*, May 23rd, 1891, p. 770.
- ANON. [signed 'A.']. **York Mid W.**
Otter Hunting in the Wharfe [near Harewood Bridge: a 22½ lb. dog Otter (*Lutra lutra*) killed 26th June, by Col. Dawson's new pack, the Weston Otter Hounds]. *Field*, July 5th, 1890, p. 35.
- ANON. [signed 'Ellen' and 'E.H.B.']. **Cumberland.**
The West Cumberland Otter Hounds [at Bridgefoot, Rivers Morron and Derwent, Cockbridge on the Ellen; good sport; two notes]. *Field*, Aug. 16th, 1890, p. 251.
- ANON. [signed 'Airedale']. **York Mid W.**
Colonel Dawson's (Weston) Otter Hounds [at Eastburn Beck and Lothersdale Beck, at Carr Head and Malsis; good sport after *Lutra*]. *Field*, Aug. 30th, 1890, p. 357.
- ANON. [signed 'Tyke']. **York S.E.**
Sir Charles Legard's Otter Hounds [at Thicket Priory and on the Derwent and Pocklington Canal; female *Lutra* killed]. *Field*, Sep. 13th, 1890, p. 426.
- ANON. [signed 'Old Madge']. **Cumberland.**
West Cumberland Otter Hounds [at Bullgill and Arkleby; good sport with *Lutra*]. *Field*, Sep. 20th, 1890, p. 441.

- ANON. [not signed]. Isle of Man.
[Mammal observed at an] Excursion to the Mull Hills [Isle of Man, 24th May, 1887; an *Erinaceus europæus*]. Back Trans. I. of Man N.H.S., i. 117; publ. with Yn. Lioar Manninagh, No. 7, Oct. 1890.
- ANON. [signed 'F. R.']. Isle of Man.
Fight between Magpie and Rat [(*Mus decumanus*) in a corn-field near Ramsey, Isle of Man]. Yn Lioar Manninagh, No. 7, Oct. 1890, i. 204.
- ANON. [signed 'Ed.']. Northumberland S.
Large Rabbit and Hare [editorial comment that the largest hare (*Lepus timidus*) of which they have record, is one of 13½ lb., killed by R. Henderson, at Longwitton, Northumberland]. Field, Feb. 14th, 1891, p. 215.
- ANON. [signed 'North Staffordshire']. ? Derbyshire.
White and Pied Stoats [(*Mustela erminea*): upwards of a dozen have been seen and killed by keepers about 'The Peak' during the past severe winter, more than average, although five or six are killed every winter]. Field, April 11th, 1891, p. 538.
- ANON. [signed 'P.Q.']. Lanc. W., Furness.
Mr. R. Carnaby Forster's Otter Hounds [in pursuit of *Lutra* at Halton-on-Lune, Hornby Bridge, Underley, Windermere, etc.]. Field, July 4th, 1891, p. 11.
- ANON. [signed 'C.']. Cumberland.
West Cumberland Otter Hounds [in pursuit of *Lutra* at Maryport, the Ellen, Keswick, Cockermouth, Braithwaite, etc.]. Field, July 4th, 1891, p. 11.
- ANON. [signed 'Otter']. York N.E.
Sir Charles Legard's Otter Hounds [in pursuit of *Lutra* in Forge Valley and Troutdale]. Field, Aug. 1st, 1891, p. 203.
- ANON. [signed 'C.W. (Withernsea, Yorkshire)']. York S.E.
Hare [*Lepus timidus*] **taking to the Sea** [at Withernsea, Dec. 6th, 1891, to escape from a dog, and swam past all three lines of breakers]. Field, Dec. 12th, 1891, p. 892.
- SAMUEL ALLENBY. Linc. N.
Albino Hedgehog [(*Erinaceus europæus*) at Cadwell near Louth; perfectly white with pink eyes]. Field, Nov. 9th, 1889, p. 667.
- J. C. ATKINSON. York N.E.
Wild Cherry Stones used as Food by the Long-tailed Field-mouse [(*Mus sylvaticus*) at Danby-in-Cleveland, where also *Arvicola agrestis* occurs]. Nat., Feb. 1889, p. 54.
- JAMES BACKHOUSE, jun. York N.W.
[Mammals observed by] the Yorkshire Naturalists' Union in Upper Teesdale [in Aug. 1889; *Talpa* and *Sorex*]. Nat., Oct. 1889, p. 291.
- JAMES BACKHOUSE, jun. York S.E.
[Mammals observed by] the Yorkshire Naturalists' Union at Kirkham Abbey and Acklam Brow [on Sept. 4th, 1889; *Sorex*, *Talpa*, *Lepus cuniculus* and *L. timidus* noted]. Nat., Nov. 1889, p. 341.
- J. BACKHOUSE. York Mid W.
Carnivorous propensities in the Water Rat [an anecdote of a *Lepus cuniculus* being killed by five *Arvicola amphibia* near Church Fenton, July 1890]. Nat., June 1891, p. 178.
- MATTHEW BAILEY. York S.E.
Seal [presumably *Phoca vitulina*] **at Flamborough** [on Oct. 4th, 1889; it escaped]. Nat., Nov. 1889, p. 322.
- MATTHEW BAILEY. York S.E.
Seal [*Phoca vitulina*] **at Flamborough** [observed near the South Landing in mid-Sep. 1890]. Nat., Oct. 1890, p. 304.

- MATTHEW BAILEY. York S.E.
Flamborough Bird Notes [with mention also of three or four large Whales seen]. Nat., Dec. 1891, p. 372.
- A. B. ROCHFORD BATTYE. Northumberland.
Tracks and Tracking on English Ground. Smaller Mammals [with figures of their foot-prints; and incidentally referring to *Mus decumanus* as a farmers' plague in Northumberland]. Field, Aug. 24th, 1889, p. 276.
- E. G. BAYFORD. York S.W.
Badger [*Meles taxus*] in South Yorkshire [on the line between Hampole and Adwick-le-Street about 6 years ago]. Nat., Sep. 1891, p. 282.
- HARRY B. BOOTH. York Mid W.
Natterer's Bat [*Vespertilio nattereri*] at Bingley, Yorkshire [obtained from the belfry tower, identified by W. D. Roebuck]. Nat., March 1891, p. 96.
- JOHN BOWMAN. Durham.
Foxes [*Vulpes vulgaris*] bred in confinement [at Polam Grange, near Darlington]. Field, May 17th, 1890, p. 708.
- F. BOYES. York S.E.
Bat [*Vespertilio pipistrellus*] flying in winter [about the streets of Beverley; occurrence of an albino a year or two ago mentioned]. Field, Dec. 20th, 1890, p. 911.
- WM. E. BRADY. York S.W.
Food of the Rough-legged Buzzard [at Bessecarr, near Doncaster, 1888, and near Barnsley in 1876: had a Mole (*Talpa europæa*) and Rat (*Mus decumanus*)]. Nat., Jan. 1889, p. 24.
- W. D. B[RAITHWAITE]. York S.W.
Ackworth N. H. Excursions [to Frickley Common; *Arvicola agrestis* noted]. N. H. J., Sep. 15th, 1891, p. 105.
- J. J. BURTON. 'Near York.'
[Young Rabbits (*Lepus cuniculus*) suckled by a cat, near York]. Nat., Sep. 1891, p. 260.
- L. BUTTRESS. Notts.
Polecat [*Mustela putorius*] in Nottinghamshire [caught alive in the Forest, a few miles from Retford, Jan. 1891]. Zool., Nov. 1891, p. 424.
- H. W. CAMBIER. Lanc. S.
Grey Variety of the Black Rat [caught in the refrigerator of a ship carrying frozen mutton between the Plate River and Liverpool; Oldfield Thomas refers it to *Mus alexandrinus*, the grey form of *M. rattus*]. Field, Jan. 26th, 1889, p. 126.
- JAMES CARTER. York N.W.
Notes from North Yorkshire [*Vesperugo noctula* found on the ground at Masham beneath a piece of dung; sent to Edinburgh Museum]. Field, April 12th, 1890, p. 518.
- JAMES CARTER. York N.W.
Unusual Fecundity in Hare [*Lepus timidus*] near Masham; five leverets in one nest this summer]. Field, Sep. 20th, 1890, p. 462.
- JAMES CARTER. York N.W.
Wounded Rabbits biting [near Masham; *Lepus cuniculus* frequently does so, and also *L. timidus*]. Field, September 27th, 1890, p. 493.
- JAMES CARTER. York N.W.
A Fox [*Canis vulpes*] on the Warpath [at Burton House, Masham; interesting account of tracking one's footprints in fresh snow]. Field, Jan. 24th, 1891, p. 120.

- JAMES CARTER. York N.W.
Otter [*Lutra lutra*] **devouring a Drake** [at Burton House near Masham].
 Field, April 11th, 1891, p. 538.
- ALFRED C. CHAPMAN, Durham or Northumberland?
Natural History Notes from the North [of England, written from
 Leamside, co. Durham, but not localised, and dealing with habits, etc., of
Vulpes, *Lepus cuniculus*, and *Mustela vulgaris*]. Field, Aug. 2nd, 1890, p. 201.
- J. E. CLARK. York S.E.
[Young Shark (species not stated) and *Phoca vitulina* seen near Filey Brig].
 N.H.J., Dec. 15th, 1890, p. 167.
- WM. EAGLE CLARKE. York N.W.
Daubenton's Bat [*Vespertilio daubentonii*] **added to the Yorkshire Fauna**
 [one shot on the Yore at Masham, Aug. 19th, 1891, by Basil Carter]. Nat.,
 Sep. 1891, p. 275.
- WM. EAGLE CLARKE. York N.W.
Daubenton's Bat [*Vespertilio daubentonii*] **in Yorkshire** [one shot on the Yore
 at Masham, 19th Aug., 1891; new to Yorkshire]. Zool., Oct. 1891, p. 395.
- J. COLLINS. Lanc. S. and Cheshire.
Curious Visitors at Sugar [near Warrington; Rats (*Mus decumanus*) very
 troublesome]. Young Nat., June 1890, p. 118.
- EDWARD COMBER. Cheshire.
Black Variety of the Water Vole [*Arvicola amphibia*] in Wirral [one shot
 close to Parkgate, winter of 1881-82]. Zool., Oct. 1891, p. 384.
- JOHN CORDEAUX. York S.E., Linc. N.
Bottle-nosed Dolphin [*Delphinus tursio*] **in the Humber** [at Tetney Haven,
 25th Aug. 1888; refers also to one at Spurn, Sep. 1879]. Nat., Jan. 1889, p. 6.
- JOHN CORDEAUX. York S.W.
Wild Cat [*Felis catus*] **in Yorkshire** [repeating from Murray's 'Handbook for
 Yorkshire' the Barnborough tradition]. Zool., June 1890, p. 215.
- J. C[ORDEAUX]. York N.E.
**[Inordinate increase of *Mus sylvaticus* and *Arvicola agrestis* at Danby-in-
 Cleveland, resulting from destruction of Kestrels, noted in reviewing J. C.
 Atkinson's 'Forty Years in a Moorland Parish'].** Nat., Oct. 1891, p. 309.
- JOHN CORDEAUX. York S.E.
A White Porpoise [(*Phocæna communis*) **off the Holderness Coast**, near
 the Spurn, seen Oct. 5th]. Zool., Nov. 1891, p. 425.
- WILLIAM CROSS. Lanc. W.
Among the Fylde Flowers. I. Lytham and St. Anne's-on-the Sea
 [*Lepus cuniculus* noted in passing]. Wesl. Nat., Jan. 1889, p. 322.
- J. BURTT DAVY. Linc. N.
Churchwardens' Accounts, Cockerington S. Mary's, North Lincolnshire
 [with entries of *Talpa*, *Vulpes* and *Lutra*, 1732, 1735, and 1744]. Nat.,
 May 1891, p. 144.
- WILLIAM SCARTH DIXON. York N.E. and Mid W.
**In the North Countrie. Annals and Anecdotes of Horse, Hound, and
 Herd.** [Gives historical notices of Fox-hunting in Yorkshire from 1686
 down]. London: Simpkin, Marshall & Co. York: Sampson Brothers,
 1889. [See Review in Field, July 13th, 1889, p. 45. Not seen by
 compiler].
- J. W. FAWCETT. Northumberland S., Cumberland, Durham.
Otters [*Lutra lutra*] **in the North** [brief particulars given of several
 Northumberland, Cumberland, and Durham captures]. Nat., April 1890,
 p. 120.

- J. W. L. T. FAWCETT. Durham.
Seal [*Halichoerus gryphus*] **on Coast of Durham** [one Mch. 17th, 1887, between Hartlepool and Seaham ; measurements given]. Nat., Aug. 1890, p. 255.
- THOMAS FORD. Linc. N.
Badgers [*Meles taxus*] **in Lincolnshire** [several on the Hundon estate near Caistor]. Field, Jan. 12th, 1889, p. 51.
- R. FORTUNE. York Mid W.
A trap for Field Mice [near Harrogate ; old tin-can contained eight ; species not stated]. Zool., April 1890, p. 134.
- RILEY FORTUNE. York N.W.
[Mammals observed by] the Yorkshire Naturalists' Union at Leckby Carr [on May 18th, 1891 : *Erinaceus*, *Sciurus*, *Mus decumanus*, *Arvicola amphibia*, *A. agrestis*, *Lepus timidus*, *L. cuniculus*]. Nat., Aug. 1891, p. 237.
- RILEY FORTUNE. York Mid W.
[Mammals observed by] the Yorkshire Naturalists' Union at Grassington [20th June, 1891 ; *Vespertilio mystacinus* and *Myoxus* recorded as new to the recorded fauna of the district ; *Mustela vulgaris*, *Sciurus*, *Arvicola amphibia*, *A. agrestis*, *Lepus timidus*, and *L. cuniculus* also noted]. Nat., Sep. 1891, p. 264.
- RILEY FORTUNE. York S.W.
[Mammals observed by] the Yorkshire Naturalists' Union in Edlington and Wadworth Woods [near Doncaster, 16th and 17th Sep. 1891 ; *Talpa*, *Muscardinus*, *Mustela vulgaris*, *Sciurus* and *Lepus cuniculus*]. Nat., Nov. 1891, p. 333.
- J. W. FOSTER. Notts.
Badger [*Meles taxus*] **near Nottingham** [one weighing 34 lbs. caught on E. W. Field's Aspley Hall Estate]. Field, Jan. 5th, 1889, p. 27.
- F. G. FRYER. York N.E.
Two dead Foxes [(*Vulpes vulgaris*) in Nova Scotia Wood near York]. N.H.J., May 15th, 1890, p. 76.
- W. A. GAIN. Notts.
Squirrels [*Sciurus vulgaris*] **and their Nests** [as noted in the Dukeries, Sherwood Forest ; the young never leave the nest during the summer in which they are born]. Sci. Goss., Aug. 1889, p. 189.
- ROBERT GARNER. Isle of Man.
Notes on the Natural History of the Isle of Man [discussing former occurrence of *Megaceros*, absence of *Talpa*, doubts as to *Arvicola amphibia*, and queries about tailless *Felis catus*]. Trans. I. of Man N.H.S., vol. 1, 1879-84 (publ. 1888), pp. 85-90.
- C. F. GEORGE. Linc. N.
Parasite of Water Rat (*Arvicola amphibioides*) [found at Alford by J. E. Mason]. Sci. Goss., Jan. 1889, p. 6.
- C. F. GEORGE. ? Linc. N.
Parasites on Rats and Mice [*Mus sylvaticus* specified ; locality not given, but probably Kirton-in-Lindsey]. Sci. Goss., May 1889, p. 116.
- T. GIBBS, Jun. Derbyshire.
Calendar of Nature for 1882 [at Bretby near Burton-on-Trent : 'Bat' (species not stated) seen 26th Feb.]. 7th Ann. Rep. Burton-on-Trent N.H. and Arch. Soc. for year ending 31st March, 1883, p. 16.
- T. GIBBS, Jun. Derbyshire.
Calendar of Nature, 1884 [Jan. 8th, Bat seen at Burton-on-Trent]. 9th Ann. Rep. Burton-on-Trent N.H. and Arch. Soc., for 1884, pub. 1885, p. 23.

- G. T. GROVES. York N.E.
Hare [*Lepus timidus*] **swimming** [across the Derwent near Ayton. Sep. 10th, 1889]. *Field*, Sep. 21st, 1889, p. 416.
- G. H. CATON HAIGH. Linc. N.
Bat [*Vespertilio daubentonii*] **resting on the Water** [at Grainsby Hall near Grimsby]. *Zool.*, Nov. 1889, p. 434.
- JAMES HARDY. Cheviotland.
Report of the Meetings of the Berwickshire Naturalists' Club, for the year 1888 [horns of Red Deer (*Cervus elaphus*), 12 or 13 points, at Broom-park, Northumberland, found in draining a marsh; also at Shawdon, great ravages at Lincombe dean by *Arvicola amphibia*]. *Proc. Berw. Nat. Club* for 1888 (pub. 1889), vol. 12, pp. 175, 178, and 179.
- JAMES HARDY. Cheviotland.
Report of the Meetings of the Berwickshire Naturalists' Club, for the year 1889 [with notes as to *Meles taxus* and *Canis vulpes* at Linhope Linns; and former as still at Thrunton Crags]. *Proc. Berw. Nat. Club* for 1889, vol. 12, No. 3 (pub. 1890), pp. 449 and 453.
- H. S. HARLAND. Lanc. W.
Rare Birds and Mammals preserved at Brighton [a cream-coloured *Arvicola agrestis* captured near Garstang 'about a month ago']. *Field*, Feb. 15th, 1890, p. 248.
- H. S. HARLAND. York S.W.
Weasel [*Mustela vulgaris*] **attacked by Hawks and Magpies** [at a country house some three miles out of Sheffield; the combat described]. *Field*, July 5th, 1890, p. 9.
- J. E. HARTING. Cumberland.
[Pine-Marten (*Martes sylvestris*), trapped in Cumberland, exhibited]. *Proc. Linn. Soc.*, Ap. 5th, 1888, p. 11.
- Northumberland, Cumberland, Durham,
Yorkshire, Lancashire.
- J. E. HARTING.
The Roe-Deer, Capreolus caprea [treated of as a British species; its former occurrence in Northumberland, Cumberland, Durham, Yorkshire, Lancashire referred to in a passing sentence]. *Zool.*, March 1889, pp. 81-82.
- Cumberland, Westmorland, Northumberland,
Durham, Cheviotland.
- J. E. HARTING.
Daubenton's Bat, Vespertilio daubentonii, Leisler [treated of as a British species: reference made to its occurrence at Ulleswater, July 1863, Grasmere, Carlisle, Durham, Darlington, Shotley Bridge, Auckland St. Andrew, Long Benton, and Twizel]. *Zool.*, May 1889, pp. 161-166.
- J. E. HARTING. Linc. N., York S.W. and Mid W., Durham.
Natterer's Bat, Vespertilio nattereri [giving localities in Lincolnshire, Yorkshire, and Durham, at p. 247]. *Zool.*, July 1889, pp. 241-248.
- J. E. HARTING. Cumberland.
Distribution of Natterer's Bat [*Vespertilio nattereri*] **in Britain** [giving some Cumberland records in detail, on the authority of H. A. Macpherson]. *Zool.*, Aug. 1889, p. 309.
- Cheviotland, Northumberland S., Notts,
York S.W. Mid W., Lanc. S., Linc. N., Cumberland.
- J. E. HARTING.
English Deer-Parks [giving particulars, historical and otherwise, as given by various old writers, and the dates of the extinction of *Cervus elaphus* as a wild animal in various districts; mention also of *C. dama* and *C. capreolus*]. *Zool.*, May 1890, pp. 153-160.

- J. E. HARTING. York S.W. and N.E.
The Wild Cat [*Felis catus*] in Yorkshire [repeating Clarke and Roebuck's Yorkshire Vertebrata, and afterwards giving in detail the Barnborough Legend]. Zool., May 1890, p. 176.
- J. E. HARTING. Cheviotland.
The Chillingham Wild Cattle [giving extracts from Lord Malmesbury's Journal for 1833 and from the Middlewick Journal or Cheshire Advertiser of Dec. 14th, 1746]. Field, Sep. 6th, 1890, p. 392.
- J. E. HARTING. Cheviotland, Cheshire, Lanc. S.
Wild White Cattle [(*Bos taurus*); enumerating the herds, with a slight history, and an account of the transference of a Chartley bull and a Vaynol heifer to the Zoological Gardens; woodcut given of the head of a Chillingham bull]. Field, Dec. 13th, 1890, p. 881.
- J. E. HARTING. Durham.
The Serotine, Vesperugo serotinus [noting that there is said to be one, taken at Cleadon in 1836, in the Newcastle Museum, and surmising that it is more likely *V. noctula*, forgetting that this point had already been settled and notes published in the Zoologist]. Zool., June 1891, p. 205.
- J. E. HARTING. Linc. S., Notts., Cheviotland.
Albinos and White Varieties [with details of the Duke of Portland's herds of 150 white Fallow Deer (*Cervus dama*) and 16 white Red Deer (*C. elaphus*) which are kept apart; and notice that there are a few white *C. elaphus* in Earl Brownlow's park, Belton House, Grantham, and at Alnwick Castle]. Field, July 18th, 1891, p. 88.
- J. E. HARTING. Yorkshire, Linc. N. and S., Lanc. S.
The Polecat, Mustela putorius [a copious account of present knowledge of its distribution, Lincolnshire (near Grantham, etc.), Yorkshire, Durham, Northumberland, Cumberland, Westmorland, Furness, with some details, and also lengthy narratives of its being hunted in the Lake district, and about Rochdale; and notices of Ferrets (*M. furo*) in 1621 in the Household Book of Lord William Howard of Naworth]. Zool., Aug. 1891, xv. 281-294, and plate 3.
- J. E. HARTING. Notts., Yorkshire, Lanc. W.
The Fox, Vulpes vulgaris [a general account, notes on first institution of hunting]. Zool., Sep. 1891, xv. 321-334, and plate 2.
- Northumb. S., York S.W., Westmd., Furness, Cumb.,**
- J. E. HARTING. Linc. N. and S., Cheshire.
The British Marten. Martes sylvatica, Nilsson [a general and historical account of the species as British; extracts from old records of the Nevilles of Chevet, 1526, a Lincolnshire sportsman's diary of 1825, and description of the method of hunting in Cumberland, which is the only English county where the Marten is still a beast of chase; and full details as to what is recorded or known of it in Northumberland, Cumberland, Westmorland, Durham, Yorkshire, Furness, Cheshire, and Lincolnshire, besides other parts of England]. Zool., Nov. and Dec. 1891, pp. 401-409, and 450-459, and plate 4.
- A. HAVILAND. Isle of Man.
The Necessity for Collecting and Arranging the Ascertained Facts relating to the Glaciation of the Isle of Man [discussed, and reference made to the occurrence of *Cervus megaceros*]. Back Transactions of the Isle of Man N.H.S., p. 64; published with Yn Lioar Manninagh, No. 4, Oct. 1889.
- JOHN HAWELL. York N.E.
The Yorkshire Naturalists' Union at Kildale-in-Cleveland [12th July, 1890; the geological report notes that horns of *Cervus elaphus* and *C. tarandus* have been found in the peat-bed near Kildale Station]. Nat., Sep. 1890, p. 274.
- March 1893.

- JOHN HAWELL. York N.E.
Bats Flying in Sunlight [as observed at Ingleby Greenhow; species not stated]. *Sci. Goss.*, Aug. 1891, p. 187.
- J. S. HODGSON. Westmorland.
A Bat [*Vespertilio pipistrellus*] at 1 p.m. [seen near Milnthorpe, Sep. 30th; sunny day]. *N. H. J.*, Dec. 15th, 1889, p. 172.
- WM. HODGSON. Cumberland.
The Wild Cat [*Felis catus*] in Cumberland [expressing doubt as to certain records, and giving the latest authentic record]. *Nat.*, Dec. 1891, p. 353.
- RICHARD HOWSE. Durham, Northumberland S.
Catalogue of the Local Fossils in the Museum of the Natural History Society [at Newcastle; including records of *Cervus elaphus*, *C. capreolus*, *C. alces*, *Bos primigenius*, *Sus scrofa*, *Megaceros hibernicus* and *Elephas primigenius* in Northumberland and Durham]. *Nat. Hist. Trans. Northumb. Durh. and Newc.*, vol. 10, part 2 (1890), pp. 228-229.
- A. HUGHES. York N.E.
[Nest of Young Squirrels (*Sciurus vulgaris*) at Stockton near York]. *N. H. J.*, May 15th, 1889, p. 67.
- A. S. HUTCHINSON. Derbyshire.
White Stoats [*Mustela erminea*] in Derbyshire [localities given for a dozen examples, killed since February began]. *Field*, April 4th, 1891, p. 477.
- HENRY HYDE. Cheshire.
[Mole (*Talpa europæa*) noted at an] excursion to Ashley, for the Bollin Valley [on April 21st, 1888]. *Rep. and Trans. Manch. Sci. Stud. Ass. for 1888* (publ. March 1889), p. 30.
- HENRY HYDE. Derbyshire.
[Weasels (*Mustela vulgaris*) noted on an excursion to] Glossop, for Mossy Lea [on July 14th, 1888]. *Rep. and Trans. Manch. Sci. Stud. Ass. for 1888* (publ. March 1889), p. 36.
- JAMES INGLEBY. York Mid W.
Scarcity of Lesser Horse-shoe Bat [*Rhinolophus hipposideros*] in Nidderdale [where it occurs at Ned Hole]. *Nat.*, Feb. 1889, p. 54.
- A. G. JARVIS. Linc. N.
Squirrels [*Sciurus vulgaris*] and **Fungi** [at Woodhall Spa, July 1890]. *Nat.*, Aug. 1890, p. 228.
- J. M. JEFFCOTT. Isle of Man.
Address of the Retiring President [with references to remains of *Cervus elaphus* and *C. megaceros* in Manx peat-bogs; 'feeah' given as Manx name of former]. *Yn Lioar Manninagh*, No. 2, April 1889, i. 56.
- J. M. JEFFCOTT. Isle of Man.
Address of the Retiring President [of the Isle of Man N.H.S., delivered 27th March, 1890; on Manx words in general; craitnag = Bat (*Vespertilio pipistrellus*) from craitnagh, wrinkled; mwaagh = Hare (*Lepus timidus*); assag = Stoat (*Mustela erminea*); keirey = Sheep (*Ovis aries*); Conning = Rabbit (*Lepus cuniculus*) and Roddan = Rat (*Mus decumanus*) are corruptions of English words coney and rat (? ratten), the animals not being indigenous as Manx]. *Yn Lioar Manninagh*, No. 5, Jan.-April 1890, p. 155.
- F. P. JOHNSON. Cumberland.
Hybernation of Squirrels [(*Sciurus vulgaris*); near Brampton the writer would undertake to find traces in the snow whenever the ground is covered]. *Zool.*, April 1891, p. 152.
- J. E. KELSALL. Linc. N., Derbyshire.
Distribution of Daubenton's Bat [*Vespertilio daubentonii*] in Britain [referring briefly to records for Lincolnshire and Derbyshire]. *Zool.*, 1889, p. 308.

- P. M. C. K[ERMODE]. Isle of Man.
Phenological Observations [with Manx dates for Common Bat (*Vespertilio pipistrellus*)'s appearance]. Vannin Lioar, No. 1, Jan. 1889, i. 19.
- P. M. C. KERMODE. Isle of Man.
Tumuli on Snaefell and Sky-hill [with incidental mention that Garner attributes the absence of small bones (so abundant in English tumuli) from the tumuli, to the absence of *Arvicola amphibia* from the Manx fauna]. Back Transactions of Isle of Man N. H. S., i. 29, publ. with Yn Lioar Manninagh, No. 2, April 1889.
- P. M. C. KERMODE. Isle of Man.
Notes on Manks Mammals [given in some detail; the Tailless Cat (*Felis catus*), *Cervus megaceros* (extinct), *C. elaphus* and *C. dama* (both introduced within historical times but soon extinct), *Vespertilio pipistrellus*, *Plecotus*, *Erinaceus*, *Sorex araneus*, *Mustela erminea*, *Mus sylvaticus*, *M. musculus*, *M. decumanus*, *Lepus timidus*, *L. cuniculus*, *Phocæna communis*, and a whale, probably *Balenoptera boops*, noted, with details as to occurrence (several others mentioned as *not* occurring), Manx vernacular names and superstitions, etc.]. Back Transactions of Isle of Man N. H. S., i. pp. 43-49, publ. with Yn Lioar Manninagh, No. 3, July 1889.
- P. M. C. KERMODE. Isle of Man.
Address by the Retiring President . . . delivered . . . March 11th, 1886 [gives titles of papers dealing with the Manx Fauna]. Back Trans. I. of Man N. H. S., i. 72; publ. with Yn Lioar Manninagh, No. 4, Oct. 1889.
- P. M. C. KERMODE [Secretary]. Isle of Man.
Exhibition of the Horn of a Roe Deer (*Cervus capreolus*) found near the Round Tower, Peel]. Proc. I. of Man N. H. S., July 12th, 1889; Yn Lioar Manninagh, No. 4, Oct. 1889, i. 95.
- P. M. C. KERMODE. Isle of Man.
The Antiquities of the Parish of Bride [with a note anent Lough Pherrick, that if ever there were Otters (*Lutra lutra*) in the Island they may have been met with in this Lough]. Yn Lioar Mannin., No. 7, Oct. 1890, i. 183.
- E. P. KNUBLEY. York N.E.
[Mammal observed by] the Yorkshire Naturalists' Union at Robin Hood's Bay [21st June, 1889; *Lepus cuniculus*]. Nat., Aug. 1889, p. 229.
- G. W. LAMPLUGH. York S.E.
Fossils from the Sewerby Cliff-beds [*Elephas primigenius*, *E. antiquus*, *Rhinoceros*, *Hippopotamus amphibius*, *Equus*, *Cervus megaceros*, *Bos primigenius*, *Bison*, *Hyæna*, *Arvicola amphibia*, mentioned, some with uncertainty]. Rep. 58th Meeting of Brit. Ass., Bath, 1888 (pub. 1889), p. 334.
Cumberland, Westmorland, York N.E.,
Cheshire, Durham.
- RAWDON LEE. Cheshire, Durham.
Otters [*Lutra lutra*] and **Otter Hunting** [giving a list of the otter-hound packs and discussing the scarcity or abundance of otters in various districts of British Isles; five packs are kept in our northern counties]. Field, April 26th, 1890, p. 599.
- B. B. LETALL. York N.E.
York, Bootham. Natural History Club [note of a 'gallows tree' at Langwith with about 100 moles (*Talpa europæa*) on it]. N. H. J., Dec. 15th, 1889, xiii. 168.
- R. L[YDEKKER]. Lincs., Notts., York S.E.
The Present Distribution of the Beaver [(*Castor fiber*) sketched; reference also made to remains found in Lincolnshire and Yorkshire, to the fact that the place in Yorkshire where remains were found (Wawne) is close to a place named from the animal (Beverley); and to the name of Bevercater (Notts.)]. Field, Jan. 3rd, 1891, p. 9.

- CUMMING MACDONA. Cheshire.
Fox [*Canis vulpes*] **swimming** [across Chapel Mere, Cholmondeley Park, Malpas, Cheshire, on an island in which it was rearing a litter]. *Field*, July 26th, 1890, p. 160.
- H. A. MACPHERSON. Cumberland.
Squirrel (*Sciurus vulgaris*) **feeding on Fungi** [in Cumberland]. *Nat.*, Dec. 1890, p. 356.
- H. A. MACPHERSON. Cumberland, Furness.
The Polecat [*Mustela putorius*] **in Wales and Cumberland** [in which county it is quite rare or nearly extinct; *Meles* now extinct; *Martes* getting scarcer every year, though it still occurs in Westmorland; *Erinaceus* referred to]. *Zool.*, Sep. 1891, pp. 342-344.
- T. G. MAGHIE. Cumberland.
Unusual Fecundity in Hare [(*Lepus timidus*); five leverets noted in one nest, 27th July, 1890, at Wragmire Bank, near Carlisle]. *Field*, Sep. 13th, 1890, p. 404.
- JAS. EARDLEY MASON. Linc. N.
Parasites on the Water Vole [(*Arvicola amphibia*) found at Alford, 28th October, 1888]. *Nat.*, Feb. 1889, p. 60.
- JAMES EARDLEY MASON. Linc. N.
Badger [*Meles taxus*] **in Lincolnshire** [one found 15th March, 1890, in Gayton Fen, crossed the river Eau into Withern Fen, and finally taken near Strubby Church; weight 18 lbs.]. *Nat.*, April 1890, p. 120.
- J. EARDLEY MASON. Linc. N.
Parish Accounts, Rigsby with Ailby, North Lincolnshire [from 1686 to 1710; entries of sums paid for *Vulpes*, *Meles*, *Lutra*]. *Nat.*, June 1891, p. 178.
- PHILIP B. MASON. Derbyshire.
Hybernation of Squirrels [(*Sciurus vulgaris*); at Drakelow Hall, near Burton-on-Trent they remained active throughout the whole of the recent severe and prolonged frost]. *Zool.*, April 1891, p. 151.
- L. C. MIALL. York Mid W.
Natural History of the Aire [repeating Gale's record (1710) of *Lutra* in the Aire]. Handbook for Leeds and Airedale. Prepared for the use of the British Association, Leeds, 1890, pp. 22, 23, and 24.
- L. C. MIALL. Yorkshire.
Extinct Quadrupeds of Airedale [mentioning *Hippopotamus*, *Elephas primigenius*, *Bos primigenius*, at Wortley and Lothersdale; *Ursus arctos*, *Canis lupus*, *Hyæna*, *Felis lynx*, *F. leo*, *Tarandus rangifer*, *Cervus megaceros*, *Bison*, *Rhinoceros*, all alluded to as having been once inhabitants of Yorkshire]. Handbook for Leeds and Airedale. Prepared for the use of the British Association, Leeds, 1890, pp. 39-40.
- A. D. MICHAEL. Derbyshire.
On some unrecorded Parasitic Acari found in Great Britain [at Chatsworth, autumn of 1888, on *Arvicola agrestis* and *Erinaceus europæus*]. *Journ. Linn. Soc.*, *Zool.*, No. 123, Dec. 31st, 1889, xx. 400-406; *Zool.*, March 1888, p. 112.
- J. GRAFTON MILNE. Lanc. S.
Extracts from Lancashire Churchwardens' Accounts [Rochdale, 1640, *Erinaceus*; 1642, *Vulpes*; Oldham, 1734, Ryton, Chaderton, 1735, and Crompton, 1735, *Erinaceus*]. *Nat.*, May 1889, p. 142.
- T. H. NELSON. York N.E.
Common Seal [*Phoco vitulina*] **at Coatham** [a young one shot 5th March, 1890]. *Nat.*, Jan. 1890, p. 120.
- T. H. NELSON. York N.W., Durham.
Whale [*Hyperöödon rostratus*] **at the Tees Mouth** [caught at South Gare; account of capture; slight description of example]. *Nat.*, Aug. 1890, p. 228.

- T. II. NELSON. York N.E.
The Yorkshire Naturalists' Union at Kildale-in-Cleveland [with note that the Badgers (*Meles taxus*) reported from Ingleby are doubtless from Hutton Woods, where they have been turned down; also of a hybrid *Lepus timidus* × *cuniculus* shot at Easby]. Nat., Sep. 1890, p. 271.
- CHARLES OLDHAM. Derbyshire, Cheshire.
Whiskered Bats [*Vespertilio mystacinus*] in Derbyshire [at Lathkill Dale near Bakewell, Jan. 1st, 1889; comparison made of habitat of this and Alderley Edge, Cheshire, examples]. Zool., Feb. 1889, p. 68; and Nat., Feb. 1889, p. 59.
- CHAS. OLDHAM. Cheshire.
Bank Vole [*Arvicola glareolus*] and **Short-tailed Vole** [*A. agrestis*] in North Cheshire [at Northenden; also *Mus sylvaticus*, and *Sorex tetragonurus* or *minutus*; *Mustela vulgaris* growing rarer]. Zool., March 1890, p. 98.
- CHAS. OLDHAM. Lanc. W.
Whiskered Bat [*Vespertilio mystacinus*] in Shropshire and Lancashire [one caught in a bedroom at Lytham, July 1888]. Zool., Sep. 1890, p. 349.
- CHAS. OLDHAM. Lanc. W.
Albino Long-eared Bat [*Plecotus auritus*] in Lancashire [killed by R. Standen at Goosnargh, Aug. 1866, uniform light cream-colour]. Zool., Sep. 1890, p. 349.
- CHAS. OLDHAM. Cheviotland.
Alleged Antipathy of Cattle to Deer [criticized from observation of *Bos taurus*, *Cervus elaphus*, and *C. dama* at Chillingham Park]. Zool., Dec. 1890, p. 453.
- CHARLES OLDHAM. Cheshire, York Mid W.
The Lyme Park Herd of Wild White Cattle [(*Bos taurus*); a full historical and descriptive account of what is known of the herd, and of their being crossed in 1859 with a cow and bull-calf, the last survivors of the Gisburne herd; measurements of skulls and heads given, and woodcuts showing forms of horns prior and subsequent to the Gisburne cross in 1859]. Zool., March 1891, pp. 81-87.
- JNO. D. PATCHETT. Notts.
Water Rat [*Arvicola amphibia*] and **Eel** [on the river Greet; eel swallowing the rat's tail for a worm, and releasing it]. Field, Sep. 12th, 1891, p. 431.
- ALFRED E. PEASE. York N.E.
Habits of the Badger [(*Meles taxus*) as observed at Pinchinthorpe, Guisbrough]. Field, Jan. 19th, 1889, p. 94.
- JOHN PEERS. Lanc. S.
Weasel [*Mustela vulgaris*] **defending Young** [at Penkett near Warrington; circumstantial narrative]. Field, Aug. 15th, 1891, p. 284.
- JNO. PHILIPSON. Cheviotland.
Address to the . . . Tyneside Naturalists' Field Club, read . . .
 May 15th, 1889 [noting *Cervus dama* in Eslington Park]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. 10, part 2, 1890, p. 404.
- G. PULLEN. Derbyshire.
Curious visitors at Sugar [on two occasions a mouse (species not stated, perhaps *Mus musculus*)]. Young Nat., Feb. 1890, p. 36.
- THOMAS REED. Northumberland S.
Cæsarian Operation on a Hare [(*Lepus timidus*) at Capheaton, Newcastle-on-Tyne]. Field, Dec. 14th, 1889, p. 862.
- J. ROBINSON. Cumberland.
Rabbit [*Lepus cuniculus*] **swimming across the Irthing** [being pursued by a weasel, *Mustela vulgaris*]. Nat., Oct. 1891, p. 298.

- W. DENISON ROEBUCK. York N.W.
Mammalia in Upper Swaledale [recording the trapping of *Sorex tetragonurus*, *Arvicola glareola*, *A. agrestis*, *Mus sylvaticus*, *M. musculus* and at Strands farm, near Gunnerside, Aug. 1891]. *Nat.*, Oct. 1891, p. 311.
- W. DENISON ROEBUCK.
Long-tailed Field Mouse [*Mus sylvaticus*] near Alford, Lincs. [at Rigsby, Feb. 13th, 1886]. *Nat.*, Oct. 1891, p. 311.
- C. R. ROEDER. Isle of Man.
[Manx] Folklore [concerning *Lepus timidus*]. *Yn Lioar Manninagh*, No. 9, April-Oct. 1891, p. 290.
- J. H. SALTER and N. NEAVE. Lanc. S.
Manchester Notes [anent a Bat out at 4.45, Feb. 1st]. *N. H. J.*, April 15th, 1890, p. 56.
- J. H. SALTER and N. NEAVE. Derbyshire or Cheshire.
On the Derbyshire Border [of Cheshire, near Macclesfield; Dormouse (*Myoxus avellanarius*) caught almost on the moors]. *N. H. J.*, Sep. 15th, 1890, p. 102.
- WILLIAM SHAND. Northumb. S.
Weasels [*Mustela vulgaris*] attacking a Dog [at Berridge Hag, near Morpeth; circumstantial account]. *Field*, July 25th, 1891, pp. 130-131.
- W. E. SHARP. Cheshire.
The Coleopterest [*sic*] in Delamere Forest [with note that three centuries ago it formed part of the great woodlands that occupied all West Cheshire, and owed to the Abbot of St. Werburg in Chester a Stag (*Cervus elaphus*) and six Bucks (*C. dama*) annually]. *Brit. Nat.*, Nov. 1891, p. 239.
- F. SISSONS. Notts.
Sissons's "Beauties of Sherwood Forest": a Guide to the "Dukeries" and Worksop [with notices of the Deer (*Cervus elaphus* and *C. dama*) in the various parks; also of a large herd of pure white Deer at Welbeck; and that the herds at Welbeck are carefully replenished by importations from Scottish forests]. Second edition, 8vo, 1888, pp. 51, 56, 60, 65, and 103.
- A. B. S[KIPWORTH]. Linc. N.
Badger [*Meles taxus*] in Lincolnshire [one taken at Holbeck Hall near Horn-castle, weighing 26 lbs. 10 oz., a few days ago]. *Field*, Jan. 5, 1889, p. 27.
- EDWARD H. SMART. York N.E.
Field Voles [*Arvicola agrestis*] in North-East Yorkshire [destructive to strawberries near Northallerton]. *Nat.*, Oct. 1890, p. 304.
- THOMAS SOUTHWELL. Linc. S.
Seals [*Phoca vitulina*] in the Wash [between Norfolk and South Lincolnshire; the Grey Seal (*Halicherus gryphus*) occasionally met with]. *Zool.*, Oct. 1890, p. 383.
- PETER SPICER. York N.W.
Fox [*Vulpes vulgaris*] Curiously Marked [killed in Lord Zetland's country, Yorkshire: quite white head with patches]. *Field*, May 3rd, 1890, p. 638.
- C. E. STOTT. Cheshire.
Jackdaw killing [Water] Rats [*Arvicola amphibia*] at Northwich, Cheshire; process described]. *Zool.*, Nov. 1890, p. 437.
- M. TAIT. All Yorkshire.
[Legendary references to the Boar of Bradford, the White Doe of Rylstone, the Hart-leap near Richmond, the Dragon of Wantley, the Felon Sow of Rokeby; also to the remains of various mammals in Kirkdale Cave, and Victoria Cave at Settle]. *Yorkshire; Scenes, Lore and Legends* [Leeds, 1888] pp. 9, 25, 31, 38, 41, 49, 53.

- T. TALBOT. Isle of Man.
Tailless Cats [of the Isle of Man, discussed at some length, with numerous extracts from various authors]. Trans. I. of Man N. H. S., vol. i. 1879-84 (publ. 1888), pp. 96-116.
- E. TANDY. Cumberland.
Whiskered Bat [*Vespertilio mystacinus*] in Cumberland [on the Solway; once or twice occurred before in the county]. Zool., March 1890, p. 99.
- EARL OF TANKERVILLE. Cheviotland.
The Chillingham Wild Cattle [a detailed account of experiments in crossing, with other notes on the herd, illustrated by fine woodcut from a photograph]. Field, Aug. 16th, 1890, p. 249.
- THOS. THOMPSON. Durham.
Varieties of Mole [(*Talpa europæa*) near Winlaton, caught Jan. 11th; pied example; description given]. Field, Jan. 18th, 1890, p. 83.
- C. F. T[HORNEWILL]. Derbyshire.
Calendar of Nature, 1884 [at Burton-on-Trent; *Lutra lutra* seen at Burton Bridge, April 23rd]. 9th Ann. Rep. Burton-on-Trent N. H. and Arch. Soc., for 1884, publ. 1885, p. 24.
- C. F. THORNEWILL. Derbyshire.
Calendar of Nature, 1886 [for Burton-on-Trent; Bat noted flying at 4 p.m., 21st March]. 11th Ann. Rep. Burton-on-Trent N. H. and Arch. Soc., for 1886, publ. 1887, p. 22.
- WM. TURNER. Cumberland.
On Fossil Bones of Mammals obtained during Excavations at Silloth [including those of *Bos primigenius*, *Cervus elaphus*, and some Cetaceans, probably *Balenoptera musculus* and a *Globiocephalus*]. Proc. Roy. Phys. Soc. Edinburgh, vol. 8, part 2, Session 1884-85, publ. 1885, pp. 333-338.
Linc. N., York S.E., Cumberland,
Lanc. S., Cheshire.
- WILLIAM TURNER.
On the Occurrence of the Bottle-Nosed or Beaked Whale (*Hyperoodon rostratus*) in the Scottish Seas, with Observations on its External Characters [and recapitulation of occurrences in the Humber in 1837 (skeleton in Hull museum), at Flimby near Cockermouth in September 1839, another same time on East Hoyle Bank, three near Liverpool in 1850, 1852, 1853, the last at East Hoyle Bank, one in Sept. 1858, and a female and young in Sept. 1867, near the entrance to river Ouse]. Proc. R. Phys. Soc. Edinburgh, vol. 9, part 1, session 1885-86, publ. 1886, pp. 26-27.
- WM. TURNER. York S.E., Linc. N.
On the Occurrence of Sowerby's Whale (*Micropteron bidens*) in the Firth of Forth [with brief allusions to the one at the mouth of the Humber in Sept. 1885, recorded by Clarke and Southwell]. Proc. R. Phys. Soc. Edinb., vol. 10, part 1, 1888-89 (publ. 1889), pp. 5-6.
- RUDOLPH VIRCHOW. Isle of Man.
Anthropology in the Last Twenty Years [with a note on the Tailless Cats (*Felis catus*) of the Isle of Man]. Smithsonian Report to July 1889, publ. 1890, p. 569, translated from Corr.-Blatt d. deutsch. Ges. f. Anthrop., Ethn. und Urgeschichte, Jahrg. 20, no. 9, Sept. 1889, pp. 89-100.
- EDGAR R. WAITE. York S.W.
[Mammalia observed by] the Yorkshire Naturalists' Union at Holmfirth [10th June, 1889; *Lepus cuniculus* and *Mustela vulgaris* noted]. Nat., July 1889, p. 202.
- EDGAR R. WAITE. York Mid W.
[Mammalia observed by] the Yorkshire Naturalists' Union at Harrogate [13th July, 1889; *Talpa*, *Sciurus*, *Arvicola amphibia*, *A. agrestis*, *Lepus timidus*, and *L. cuniculus* noted on walking by Hookstone to Fullwith and Rudding Park]. Nat., Aug. 1889, p. 236.

- EDGAR R. WAITE. York S.W.
[Mammalia observed by] the Yorkshire Naturalists' Union at Bretton Park [14th June, 1890; *Cervus dama*, *Talpa*, *Sorex tetragonurus*, *Arvicola amphibia*, *A. agrestis*, and *Lepus cuniculus* noted]. Nat., July 1890, p. 224.
- EDGAR R. WAITE. York S.E.
[Mammalia observed by] the Yorkshire Naturalists' Union at Lowthorpe near Driffield [26th May, 1890; *Arvicola agrestis* and *Lepus cuniculus* noted]. Nat., July 1890, p. 205.
- EDGAR R. WAITE. York Mid W.
Natterer's Bat [*Vespertilio nattereri*] near **Thorp Arch** [one picked up July 11th, 1890; a few details given]. Nat., Aug. 1890, p. 255.
- EDGAR R. WAITE. York Mid W.
Vertebrates of the Western Ainsty [giving detailed notices of 26 species of mammalia]. Nat., March 1891, pp. 81-86.
- EDGAR R. WAITE. York Mid W.
Red Field Voles [*Arvicola glareolus*] near **Lotherton, Yorkshire** [attracted by and killed with linseed oil]. Nat., May 1891, p. 144.
- EDGAR R. WAITE. York Mid W.
Common Field Voles [*Arvicola agrestis*] at **Eccup** [where they abound; burrows confined to a restricted tract of grass near the margins of Eccup reservoir]. Nat., May 1891, p. 144.
- EDGAR R. WAITE. York Mid W.
[Mammals observed by] the Yorkshire Naturalists' Union at Malham and Gordale [11th Sep. 1890; *Mustela vulgaris*, *M. erminea*, *Lepus cuniculus* and *Arvicola amphibia*]. Nat., June 1891, p. 174.
- EDGAR R. WAITE. York N.E.
[Mammals observed by] the Yorkshire Naturalists' Union at Hayburn Wyke [on July 11th, 1891; *Lepus cuniculus* only]. Nat., Sep. 1891, p. 286.
- EDGAR R. WAITE. York S.E.
[Mammals observed by] the Yorkshire Naturalists' Union on the Wolds [at Sledmere and York Dale, 3rd Aug., 1891; *Erinaceus*, *Arvicola glareolus*, and *Lepus cuniculus*]. Nat., Oct. 1891, p. 301.
- EDGAR R. WAITE. York Mid W.
Noctule [*Vesperugo noctula*] **Flying in Sunshine** [by the River Wharfe near Pool, 13th Sep., 1891]. Nat., Oct. 1891, p. 311.
- JOHN WATSON. Westmorland.
Westmorland Heronries [with an allusion to Gough finding remains of *Arvicola amphibia* in stomach of a fortnight-old Heron at Dallam Tower, and to another case of a Heron disgorging the same animal when fired at]. Westm. Note Book and Nat. Hist. Record, vol. 1, part 6, June 1889, p. 126.
- E. W. WEST. Derbyshire.
The Kestrel a Mole [*Talpa europæa*]-killer [in North Derbyshire; an instance detailed]. Field, Dec. 14th, 1889, p. 862.
- J. WHITAKER. Notts.
White Hares [*Lepus europæus*] in **Nottinghamshire** [at Bestwood and Rufford; three examples in 1888]. Zool., April 1889, p. 143.
- T. D. WHITE. Derbyshire.
White Stoat [*Mustela erminea*] in **Derbyshire** [noted while hunting Feb. 4th, 1891, with the Axe Vale Hounds at Wiscombe Park]. Field, Feb. 14th, 1891, p. 226.
- JAMES WOOD. Linc. N.
An Albino Hare [(*Lepus timidus*) shot at Grimoldby, near Louth, Oct. 1889]. Field, Oct. 26th, 1889, p. 604.

GLACIAL BOULDERS IN CALDERDALE.

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GEOLOGISTS tell us that the Glacial epoch was ushered in by a period of gradually increasing cold, which ultimately became so intense that the mountainous districts of Norway, Scotland, and the north of England became enveloped in a thick mantle of snow and ice. Then glaciers began to form on the mountains and upland valleys, from whence they radiated in all directions, but as soon as local obstacles were surmounted they all took a southward direction down the country and finally became confluent, forming one vast sheet of ice which covered Scotland and the north of England, and filled up the beds of the North and the Irish Seas with a vast thickness of ice. The route taken by many of these glaciers can be traced by the boulders which they dropped while on their way down the country.

The glacier which brought down the boulders of granite, syenite, trap and volcanic ashes, etc., that now occupy so many miles of the bed of the Calder appears to have originated in the Galloway Mountains (south-western corner of Scotland). Starting from the neighbourhood of the Solway, with its burden of 'Criffel' granite boulders it came down the western coast* bounded on the west by the great glacier from the north, which occupied the bed of what is now the Irish Sea, and on the east by the land. It then spread over Morecambe Bay, where it was joined by a great glacier from the western side of the Lake District, bringing with it a vast quantity of Lake District rocks, including Eskdale granite, Ennerdale granophyre, quartz felsite from St. John's Vale, Borrodale ashes, and many other characteristic rocks from that district.

The now greatly augmented glacier still kept to the western coast until it reached the neighbourhood of Blackpool and Lytham, where, probably meeting with less resistance from the land ice and being impelled by the great glacier on the west, it was forced across the plain of North Lancashire, engulfing and overtopping hills of from

* It is possible that the 'Criffel' granite may have crossed direct south over the Solway, and thence over the high ground on the north of the Lake District, and in this way have been commingled with the Lake District boulders, and this may have occurred either before or after the great glacier which carried the 'Criffel' granite from west to the east. Be this as it may, that well-known granite has been recognised, both in Lancashire and Calderdale.

1,200 feet to 1,450 feet in height on its route, with the same ease as a storm-swollen brook envelopes and overtops the boulders in its bed, it finally impinged against the steep flanks of Blackstone Edge and the western end of the Walsden Pass. When the glacier reached Blackstone Edge it had become greatly reduced in thickness, which was at that place estimated by the late Captain Aitken at about 1,150 feet. So that only a limited portion of the ice-sheet, with its burden of far-travelled rocks, was pushed over the Pennine Chain and found its way into Calderdale, the great bulk of the glacier being turned down the western flanks of the Pennine Chain into the plain of South Lancashire. This range of high ground is in the neighbourhood of Littleborough and Burnley cut through by two deep passes—namely, those of Walsden and Cliviger. Now, as the height of the Walsden Pass is only 627 feet and that of Cliviger 768 feet above sea-level, it must be evident that, unless these passes were either non-existent at that time or they were filled up by some means or other, the ice-sheet must have been pushed through them, down to Todmorden and thence down the valley of the Calder. The general opinion of those most familiar with the facts of the case, is that the level of these passes has not materially altered since pre-Glacial times. Hence, in order to keep back the ice-sheet, they must have been filled up by some means or other, otherwise the passes would have been strewn with boulders dropped from the glacier. Now, one of the most strange and puzzling facts in connection with the glacial phenomena of our district is that there are absolutely none of those foreign boulders to be met with in either of these passes.

Let the diligent student search these passes as long and as carefully as he may, not a single erratic of either granite or any other far-travelled rock will reward his search. But if he choose to ascend the hill on either side of the Walsden Pass, especially that on the south, he will walk over a great thickness of them for a long distance up the hillside and close to the edge of the pass, and up to the height of 1,150 feet or more above the sea-level, and in walking over the hill he may meet with some of them here and there until he reaches Walsden, which lies on the eastern side of the chain. How to account for this strange fact was for a long time a puzzle to local geologists. At length my friend, the late Captain Aitken, in order to account for the absence of glacial boulders from these passes, propounded the theory that these passes had become jammed full of local ice from the surrounding hills during the earlier portion of the glacial period, so that the great Lancashire ice-sheet when it reached the locality, found those passes full of compact ice which

formed a barrier equal to the rocky chain itself. In the deep hollow in which the town of Todmorden now stands and the many deep dales around, the local ice would be held in a compact mass, and the peculiar configuration of the ground would have a tendency to retain and preserve the local ice, nearly if not quite up to the general level of the Pennine Chain; so that the main body of the Lancashire glacier would be effectively prevented from passing through these passes into Yorkshire. Nevertheless, both Captain Aitken and myself were satisfied that our Calderdale boulders of granite, etc., had somehow and by some means come over the Pennine Chain, and somewhere near the Walsden pass. We had assured ourselves of this by a careful examination of our Calderdale boulders and by comparing them with those of East Lancashire.

When I first began to study this most interesting subject, having no particular theory of my own to support, I naturally inclined to the one which appeared to me to be the most plausible, and which seemed to be supported by the greatest weight of evidence and authority within our district, and that was the theory, that our Calderdale boulders had come from the east. Very early in my geological rambles I found a limestone boulder almost entirely full of small *Rhynchonellæ* near Widdop's Cross, at the height of about 1,200 feet above sea-level, on the southern flank of Boulsworth Hill, and a short distance on the Yorkshire side of the boundary line between Yorkshire and Lancashire. This boulder and its enclosed shells strongly reminded me of a very similar limestone boulder which only a short time previously I had met with on the Yorkshire coast at the foot of Castle Hill, Scarborough. The *Rhynchonella* found in the Widdop boulder appeared to me, and also to those persons to whom I showed them, to be closely allied, if not identical, with *Rhynchonella socialis* of the oolitic boulder from Scarborough Castle Hill. At my request, Captain Aitken took some of the Widdop boulder and its inclosed shells and submitted them to some great authority, probably Mr. Davidson, who declared the fossils to be a *Rhynchonella* from the Mountain Limestone. This settled the matter, and it was evident that this boulder had come over the ridge at Widdop's Cross from Cant's Clough, where a large number of limestone boulders may still be found, and not from the east as I had imagined. These limestone boulders are very rich in Mountain Limestone corals, encrinites, producta, spirifera, etc., and they occur in great numbers on the north end of the Burnley (Cliviger) Pass, and also all around the flanks of Boulsworth Hill and the upland valleys in that neighbourhood, where they have in former days been largely used for burning into lime. This locality seems to have been occupied in the

Glacial period by a great glacier from the north, which brought down from Craven and the neighbourhood the limestone boulders now found in the district. There appears to be no evidence to show that the Lancashire glacier with its boulders of granite, etc., ever reached the Cliviger Pass. But there is some evidence to show that a small portion of the Craven glacier did come over this Pass, bringing with it limestone boulders.

My friend, the late Mr. A. Stansfield, of Todmorden, informed me that, with the exception of a local deposit of limestone boulders once met with in an excavation 18 feet deep below the surface at Cornholm, no drift deposits had ever been met with in the neighbourhood of Todmorden. Many years ago, while on an excursion on Wadsworth Moor, an old friend of mine, a farmer who lived in the locality, called my attention to a local deposit of well-glaciated limestone boulders which had been exposed in an old occupation road leading on to the land. They were found on the edge of the moor at an elevation of about 1,150 feet above the sea-level.

It would, therefore, appear from these three deposits of limestone boulders that a small portion of the Craven glacier found its way, most probably over the southern flanks of Boulsworth Hill, into Calderdale. But the number of limestone boulders is very limited in comparison with the number of granite and other erratics which came over the ridge at Walsden. I subsequently found that the Geological Surveyors had also come to the conclusion that our Calderdale boulders had come over the Pennine Chain somewhere in the neighbourhood of Walsden. Some time after seeing the opinion of the Geological Surveyors on the subject, I paid a visit to my friend, Mr. R. Law, F.G.S., then of Walsden, and we both went over that district together, when we traced the granitic boulders here and there from Walsden to the other side of the hill, near the Walsden Pass. I was satisfied that those erratic boulders we had seen had come over the hill, and therefore that we had good grounds for believing that our Calderdale boulders of granite, etc., had come over by the same way. From Walsden we pass down the valley to Hebden Bridge,* and thence to Mytholmroyd, where Mr. Thomas Ashworth, a local observer from Hebden Bridge, once discovered a considerable number of granite boulders. From this place downwards I have found these far-travelled boulders at Luddendenfoot, at Sowerby Bridge, and at North Dean, where they were exposed during the excavations made in widening the railway viaduct over the Calder, and from whence I obtained a large number of

* Where the late Dr. Alexander has recorded the finding of boulders of granite and other foreign rocks during the making of the railway.

characteristic boulders. But at Elland they may be seen exposed in the banks of the Calder and good specimens obtained, and they are frequently met with in sinking wells and in making excavations near the Calder from Elland down to Dewsbury and Wakefield.

The following section was exposed in sinking for the foundations for the piers of the railway arch across the river Calder at North Dean.

	ft.	ins.
Soil	1	0
Fine Sand	8	0
Gravel, with boulders of local sandstones	2	0
Boulders of local rocks with a large percentage of foreign rocks, granite, syenite, traps, etc.	5	0
No bottom reached, the foundations of the piers being laid on this bed.		

The majority of the boulders were well rounded, thus indicating that they had been worn by being knocked against each other in the river. They are smooth, and no striæ or scratches were visible on any of them.

The general character and order of succession of these Glacial deposits in Calderdale, appears to be (1) surface soil, (2) a thick bed of sand with clay lower down the river, (3) gravel with boulders of local rocks, (4) gravel with local boulders, mixed with a large percentage of boulders of granite, syenite, quartzite, basalt, trap, volcanic ash, etc., which as a rule seem to repose upon the solid rocks at the bottom of the valley.

Boulders of the following characteristic rocks occur in the valley of the Calder.

St. John's Vale quartz-felsite	Micaceous trap,
Buttermere and Ennerdale granophyres,	Volcanic ash,
Eskdale granite,	Amygdaloidal trap,
Syenite.	Eycott Hill basalt,
Wastdale granite,	Quartzite, and quartz rock,
Criffel granite,	Felspar-porphry, etc.,
Basalt,	Limestone and Chert.

Most of these rocks appear to have come from the western side of the Lake District, but some have been derived like the Criffel granite from Scotland.

NOTES—ORNITHOLOGY.

Spotted Crake at Otterington.—An immature specimen of the Spotted Crake (*Porzana maruetta*), was shot near Otterington, November 1891, and is now in my possession.—WM. HEWETT, 12, Howard Street, York, Feb. 18th, 1893.

Bittern near Driffield.—A fine female specimen of the Bittern (*Botaurus stellaris*), was shot at Little Driffield on the 9th January, 1893.—WM. HEWETT, 12, Howard Street, York, Feb. 18th, 1893.

March 1893.

NOTES—ORNITHOLOGY.

Flamborough Bird-Notes.—Since last writing (January 12th, 1893) we have had a great rush of Fieldfares (*Turdus pilaris*). I do not remember the time when so many have arrived on the headland. I am informed that one night when the wind was blowing from the north-east with a gentle breeze and very foggy, the Lighthouse was literally covered with Fieldfares and Blackbirds (*T. merula*). Large flocks of Snow Buntings (*Plectrophanes nivalis*) arrived on the headland; also about the same time several Red-necked Grebes (*Podiceps griseigena*) were seen along the coast. The other day I had brought in a Red-breasted Merganser (*Mergus serrator*) by one of our fishermen, having been picked up at sea while attending to the fishing lines.—MATTHEW BAILEY, Flamborough, Feb. 15th, 1893.

Great Northern Diver at Workington.—For some weeks past a strange bird had been noticed in the Solway, in the neighbourhood of Workington and the mouth of the Derwent, which local bird-fanciers, who haunt the shore, were unable to recognise. More attempts than one had been made to capture the unknown feathered visitor. Shots had been fired without result, it being a difficult bird to kill, in consequence of its habit of swimming with only its head exposed above the level of the water. At last it was secured by Mr. Percy, a Workington blacksmith, who fired at it from the pier, and succeeded in putting a single pellet through its head. The bird proved to be a fine specimen of the Great Northern Diver (*Colymbus glacialis*), a bird apparently of the first year, as the plumage, though very fine, wants the white bands round the upper and lower parts of the neck, which distinguish the species when adult. The bird is now in the hands of Mr. Robinson, the local taxidermist, of Peter Street, in this town, to whom it has been entrusted for setting up. Mr. Robinson informs the writer that Mr. Percy has in his possession an example of the Purple Heron (*Ardea purpurea*), which he shot some years ago, when flying overhead in the dusk of the evening, near the reservoir belonging to one of the local iron furnaces.—WM. HODGSON, A.L.S., Workington, Feb. 10th, 1893.

NOTES AND NEWS.

In the June 1892 issue of the 'Journal of Botany,' Mr. George Masee has a paper on 'Some West Indian Fungi,' illustrated by three coloured plates.

We have received from Messrs. Swan Sonnenschein & Co., a copy of their recently published work in which Mr. Frank E. Beddard, M.A., F.R.S.E., treats of 'Animal Coloration,' the sub-title defining it as an account of the principal facts and theories relating to the colours and markings of animals. It is a handsome cloth-bound volume of 288 pages 8vo., dated 1892, and includes many figures and four coloured plates. Few people surely can have such advantages as Mr. Beddard has of studying 'Animal Coloration' and the character of the book now before us shows that he is fully alive to these advantages. The work from beginning to end is full of scientific facts, clearly and pleasantly told, many of them the result of careful observations and experiments made by the author himself. Although not absolutely free from error, the work may be taken as a fair and business-like treatise of the subject in hand. Mr. Beddard would perhaps have been justified in giving his book such a title as 'The Coloration of Insects and Reptiles,' as the information about these creatures is far in excess of that relating to mammals and birds. What the author alludes to on page 44, where he writes of *Lanius collaris* having a *red under-surface* or even *lemon yellow* we cannot pretend to say, but certainly we fail to see why Dr. Gadow should be saddled with such a statement. Whatever species may have been thought of by Mr. Beddard, the interest of the record, if a bona-fide one, of course remains the same. Apropos of the remarks on page 55, we would recommend a perusal of Lord Walsingham's valuable paper 'On some probable causes of a tendency to melanic variation in Lepidoptera of High Latitudes,' published in the Transactions of the Yorkshire Naturalists' Union, part 8. The subject arrangement of the book, with its four beautifully coloured plates will, we feel sure, make it a popular one, and for reference the list of authors' names appended is most convenient.

SCORPÆNA DACTYLOPTERA ON THE YORKSHIRE COAST:

AN ADDITION TO THE FAUNA OF THE BRITISH NORTH SEA AREA.

T. H. NELSON, M.B.O.U., AND WM. EAGLE CLARKE, F.L.S., ETC.

ON the 2nd of February last, one of the Redcar fishermen brought me a strange-looking fish, which had been found, washed up by the tide, on Coatham sands. Not being able to identify it myself, Mr. Roebuck forwarded the specimen to Mr. W. Eagle Clarke of the Edinburgh Museum.—T.H.N.

On examination I found the specimen greatly resembled *Sebastes norwegicus* in general appearance, but differed in the following important points, namely: (1) In having the interorbital space concave, not flat; (2) the dorsal spines longer than the dorsal rays, instead of shorter; (3) the lower jaw (dentary) was not prominent; (4) the upper posterior angle of the operculum reached to the lateral line, and was not spined at its apex. Thinking that these peculiarities—though they are certainly very marked—might, perhaps, be characteristic of the youth of *Sebastes norwegicus*, I wrote to my friend Mr. Boulenger, of the British Museum, describing them, and afterwards sent him the specimen.

He informed me that the specimen was a young *Scorpæna dactyloptera* De la Roche = *Sebastes dactylopterus* (De la Roche), (Günther, Cat. Acanth. Fishes, II., p. 99), a species whose range is known to extend to the S.W. coast of Ireland, in deep water, where several specimens were taken in 1889, from 250 fathoms (Günther, Ann. and Mag., N. H. (6), iv., 1889, p. 417). This has hitherto, I believe, been the only British record. The species is described by Dr. Günther as being common in the Mediterranean, and at Madeira, where Lowe found it in 250-400 fathoms; and it is not uncommon on the coast of Norway, in depths of from 100-300 fathoms.

The specimen was 4·8 inches in length, and of a beautiful golden-red colour, with a somewhat mottled appearance, due to a slight want of uniformity in the tint.

In conclusion, it affords me much pleasure to acknowledge my indebtedness to Mr. Boulenger.—W.E.C.

MELANISM AND MELANOCHROISM.

Melanism and Melanochroism. By J. W. TUTT, F.E.S.

Mr. Tutt has done wisely in bringing together, in book form, the series of papers on this subject which has appeared in the pages of the 'Entomologists' Record.' They form a very valuable contribution to the literature which has during the last few years appeared on Melanism in lepidoptera. Mr. Tutt's theory is, that nearly all melanism has its origin in moisture, or, as he terms it, 'humidity,' combined with natural selection; and he undoubtedly brings together many telling facts in support of this view. Some of his arguments are no doubt open to question, and indeed, as one reads through the book, objections to many of the statements constantly occur to one's mind. The fact is that probably no theory will ever be found to account for all cases of melanism, but that some or all of the various theories combined, in greater or less degree under diverse conditions in different localities; or in other words, that one or more theories together may give a satisfactory and correct solution in one part of our islands, and other theories equally so elsewhere; the result in all cases, no doubt, being 'natural selection,' in the direction of 'protection,' and consequent 'survival of the fittest.' Mr. Tutt deserves the thanks of all lepidopterists for the clear and exhaustive way he has argued the probabilities in favour of his theory, and the book ought certainly to be read and studied by every one interested in this important, and now fascinating subject.

G. T. P.

NOTES AND NEWS.

The thick double part (Nos. 199-200) of the Botanical Series of the Journal of the Linnean Society, issued last April, is exclusively devoted to papers by two well-known Yorkshire botanists, Mr. William West, F.L.S., and Mr. Thomas Hick, B.A., B.Sc. The latter gentleman's share amounts to but seven lines, in which *Xenophyton* is proposed as a substitution for a name previously given to a new Fossil Plant described by him in a former paper.

The paper by Mr. West, to which therefore the part is devoted, and which runs to 114 pages, illustrated by seven plates of figures beautifully drawn by his son, Mr. G. S. West, forms another of that most indefatigable and energetic botanist's contributions to our knowledge of the distribution of Freshwater Algæ, this paper dealing with those of the West of Ireland, collected in July 1890, and in August of the year following. The total number amounts to 617 species, 6 sub-species, 97 varieties and 37 forms, of which 34, 7, 47 and 28 respectively are described for the first time as new to science.

One of the new species—*Cosmarium nuttallii*—is named after Mr. West's botanical companion in these and many other tours, Mr. William Nuttall, of Bradford; and another—*Euastrum turnerii*—after another able and well-known student of these lowly plants, Mr. W. Barwell Turner, of Leeds.

NORTHUMBERLAND BIRD-NOTES.

F. B. WHITLOCK,

Beeston, Notts.

WANT of time has prevented me from thanking Mr. G. Bolam for the copy of the note relating to the interbreeding of the Kestrel and Merlin in 1886, as recorded in the Proceedings of the Berwickshire Naturalists' Club. A few further words will, I think, finally clear the matter up. The original note I see refers the locality where the circumstance took place to 'Barra Crag,' a spot about a mile from the nest I visited. Now, in the previous year, 1885, a pair of Merlins (*Falco æsalon*) bred at Barra Crag, and the young birds and parents were all captured as detailed in Mr. Thompson's note. Fortunately these birds were preserved, and I have seen them in a case at a gamekeeper's house in Harbottle. The female shows hardly a trace of the slate colour exhibited by an older bird, and might be mistaken for a Kestrel by an inexperienced observer. Mr. Thompson at the time I knew him was suffering from a weakness which no doubt clouded his memory, and he appears to have mixed up the circumstances relating to this pair of Merlins with those relating to the pair which bred at Linnshiels Loch, of which I recently gave the history in the 'Naturalist.' His note, too, mentioning the Dotterel (*Eudromias morinellus*), no doubt refers to the Ringed Plover (*Ægialitis hiaticula*). Before I left Harbottle in 1886, I furnished him with a list of birds I had observed during my visit. Amongst others I mentioned the Ringed Plover or Ringed Dotterel, but he appears to have added the word 'common' on his own responsibility, as I only met with two pairs.

I was very pleased to see a very nice increase in the number of breeding birds of this species on my recent visit. I think there must be quite twelve pairs now. I noticed four nests containing eggs. Amongst other birds, I also noticed rather more Redshanks (*Totanus calidris*) in the neighbourhood than in 1886. I picked one up dead, which a hawk had struck. The skin of the neck was badly torn. A keeper remarked to me that, let a new pair of birds, moderately conspicuous in plumage or habit, take up their residence in a neighbourhood where they were previously unknown, one of them was sure to be killed by a hawk. I also picked up a domestic pigeon, wounded in the neck in a similar manner.

Readers of the 'Naturalist' will remember an article on 'The Birds of Upper Coquetdale,' which appeared, I think, in 1885, from the pen of Mr. John Cordeaux. In some subsequent articles in the

'Field,' he mentions the Dunlin (*Tringa alpina*) as a bird likely to be found breeding in or near the Cheviots. I am pleased to say I met with three pairs and found two unfinished nests, from one of which the female ran with uplifted wings. Another bird I was rather surprised to meet with was a single specimen of the Oystercatcher (*Hæmatopus ostralegus*), which rose from a large bank of shingle. It was doubtless an accidental visitor from the coast. Common Sandpipers (*Tringoides hypoleucos*) were very numerous and breeding early. I noticed that in laying they often took an interval of rest before the full clutch was completed. It is, I believe, generally supposed an egg is laid every twenty-four hours.

Amongst the smaller birds the Wood Warbler (*Phylloscopus sibilatrix*), Coal Tit (*Parus ater*), and Redstart (*Ruticilla phænicura*) were fairly common. On the other hand, the Pied Wagtail (*Motacilla lugubris*) and Grey Wagtail (*M. melanope*) were much less numerous than in 1886; the latter, I am sorry to say, was quite scarce. The Dipper (*Cinclus aquaticus*), too, had decreased in numbers, no doubt owing to the severity of recent winters. The Pied Flycatcher (*Muscicapa atricapilla*) is still represented by a single pair. It is remarkable that they do not increase, as they are rarely molested.

I saw a single individual of Ray's Wagtail (*Motacilla raii*) at Alwinton, and close at hand I nearly trod on a Corn Crake (*Crex pratensis*). The latter species was very plentiful, and as the grass was short I had frequent opportunities of observing their habits. On one occasion I witnessed a desperate fight between two rival males, the female standing near, calmly looking on.

I was pleased to see young Ravens (*Corvus corax*) in a nest, nearly able to fly. I have no doubt they would get off a few days later. Ornithologists will learn with pleasure that a large landowner in the neighbourhood has forbidden the destruction of Kestrels, and as the district abounds with nesting-sites this species should soon become common.

A keeper related a curious anecdote respecting a pair of Sparrow Hawks (*Accipiter nisus*) which he had found nesting in a wood. He first shot at the female, but she escaped with a broken leg and flew away, as he thought, to die. In the meantime the male procured a fresh mate, but she was soon shot, and he himself shared a similar fate the same day. A day or two later the keeper passed the tree containing the nest, and to his great surprise off flew the wounded female. He was too astonished to shoot, so that, I am glad to say, she finally escaped, as she did not afterwards return to her eggs.

Walking on the moors near Harbottle one evening, I came across a family of four newly-hatched Golden Plovers (*Charadrius pluvialis*).

On examining one of them, I noticed it possessed an abnormal growth on the tarsus, in the shape of a long hind toe. Though the young birds were squatting only a few inches from the nest, I saw no traces of any egg shells.

February 2nd, 1893.

BIRD-NOTES FROM NOTTINGHAMSHIRE, 1892-3.

F. B. WHITLOCK,

Beeston, Notts.

THE past year (1892) has not been remarkable for any great abundance of any species of bird nor for the occurrence of many rarities. The most noteworthy visitors, perhaps, were a pair of Honey Buzzards (*Pernis apivorus*), one of which was shot at the end of July at Hucknall Torkard. It was a very clean and brightly coloured specimen, and had no doubt been blown over from the Continent by the strong east winds which prevailed during the latter part of the month. Its companion escaped. It will be observed that Mr. Cordeaux records a specimen in the Humber district about the same time.

On the 29th October, House Martins (*Chelidon urbica*) were seen lingering in the suburbs of Nottingham. On the 3rd of the following month a Spotted Crake (*Porzana maruetta*) was shot near Beeston. They seldom linger much later with us. On the 5th two Snow Buntings (*Plectrophanes nivalis*) were brought to my house. They had been shot on the Derbyshire and Nottinghamshire portions of the Trent, about Barton Ferry. I saw others a week later. The weather at the time was very mild, with light winds. At one of our local taxidermists' shop I saw a beautiful variety of the Woodcock (*Scolopax rusticola*). The primaries and tail were beautifully barred with silvery grey. It was an exceptionally fine bird in every respect. On 23rd or 24th December a beautiful immature specimen of the Little Gull (*Larus minutus*) was shot on the Trent in the borough of Nottingham. It is now in my possession.

During the frost the following ducks were noted on the Trent :— Mallard (*Anas boschas*), Wigeon (*Mareca penelope*), Teal (*Querquedula crecca*), Scaup (*Fuligula marila*), Tufted Duck (*F. cristata*), Golden-eye (*Clangula glaucion*), and Pochard (*Fuligula ferina*). On 11th January of the present year a Green Sandpiper (*Helodromas ochropus*) was shot in Nottingham Meadows. On 29th I saw a flock of ten Bullfinches (*Pyrrhula europæa*), and a few Bramblings (*Fringilla montifringilla*), an unusual sight here.

February 2nd, 1893.

March 1893.

NOTES AND NEWS.

The Council of the Geological Society has awarded to Mr. J. G. Goodchild, F.G.S., the balance for this year of the Wollaston Donation Fund, established 'to promote researches concerning the mineral structure of the earth.'



In various Parts of the Transactions of the Botanical Society of Edinburgh for the past few years are some valuable and interesting papers by Mr. Philip Sewell, of Whitby. One on 'The Colouring Matters of Leaves and Flowers' appeared in 1888 in Part 2 of Vol. 17; and in 1889 an elaborate account of the botanical collection made on the coasts of Lapland and of the Yugor Straits (N.W. Siberia), during the voyage of the 'Labrador' in 1888, appeared in Part 8 of the same volume. The latter paper includes a summarised list of all the species known from the Islands of Novaya Zemlya and Waigatz, and from the North Coast of Western Siberia.



One of the species of *Carex* collected by Mr. Sewell at Vardøe is described by Messrs. C. B. Clarke and Arthur Bennett as new, with the very suitable name of *Carex sewellii*. A figure of the plant is given as a plate.



The 19th volume of the Edinburgh Botanical Society's Transactions, published in 1891, contains a trio of papers by Mr. Philip Sewell of Whitby. The first deals with the 'Use of Sphagnum Moss in the Open-Air Gardening in the Riviera,' more especially as adopted in Mr. Hanbury's garden at La Mortola. The second paper consists of 'Observations upon the Germination and Growth of Species of *Salvia* in the Garden of Thomas Hanbury, Esq., F.L.S., at La Mortola, Ventimiglia, Italy,' the notes made during a period of five months during the winter of 1889-90. The last is entitled 'Observations regarding the Flora of the Alpes Maritimes,' and deals with the subject from a climatological point of view. Yorkshire is fortunate in being able to claim so competent and able an observer among her sons.



Messrs. Dulau & Co. have lately (1892) issued the 'Annals of British Geology, 1891,' edited by Mr. J. F. Blake, M.A., F.G.S., President of the Geologists' Association. Geologists will hail with pleasure this second volume, and it is to be trusted that its author may continue to produce a similar volume for many years to come, as the usefulness of such volumes, both to the working student, amateur or professional, can scarcely be exaggerated. As the author states, several improvements and alterations have been made on the first volume, and he further states in his preface that 'the quality of the support which this publication has as yet received is more gratifying than the quantity . . . and the series can only be continued beyond a third volume, if it be made at least self-supporting.' We ardently hope the latter consummation will be at least fulfilled if not surpassed. The reports of papers, read and published, are full and in some cases almost exhaustive, and will serve admirably to indicate to all workers what has been done in any particular branch, and where to find it. The work is divided under seven heads, viz.:—General Geology, pp. 1-53; Stratigraphical Geology, 53-173; Palæontology, 173-243 (again subdivided into various classes); Mineralogy, 243-255; Petrology, 255-313; Economics, 314-330; Maps and Sections, 330-336, with a final chapter on Foreign Geology and Supplements. Space will not allow us to particularise many of the various subjects of interest recorded, and we must confine ourselves to Yorkshire Records. In these, we find no less than 40 papers on Yorkshire Geology, more or less fully recorded, including the works of the following authors, amongst others:—Prof. Williamson, F.R.S., Messrs. J. W. Davis, F.G.S. (several), J. G. Goodchild, and others (on the Geology of Mallerstang and district), R. H. Tiddeman, G. W. Lamplugh, Rev. E. M. Cole, B. Holgate, E. Jones (Elbolton Cave), H. Speight, J. F. Blake, G. R. Vine, W. Cash, J. Spencer, Thos. Tate, A. Harker, C. Brownridge, and others, nine of them being papers published in 'The Naturalist.' The work is also illustrated by seven plates and maps. We regret to notice one mistake—in the Index—where 'The Naturalist' appears as the organ of the Yorkshire Geolog. and Polytech. Soc., instead of the Yorkshire Naturalists' Union. We heartily commend the book to all students of Geology.

ORNITHOLOGICAL NOTES FROM NORTH NOTTS FOR 1891-92.

LEONARD BUTTRESS,

Grove Rectory, Retford.

- Turdus pilaris. Fieldfare.** In 1892 the last flock was seen on May 28th, and the first on October 15th. Wind E.
- Daulias luscinia. Nightingale.** First heard singing April 25th, 1892. Wind N.W.
- Phylloscopus sibilatrix. Wood Wren.** First seen on Gringley Common, on April 15th, 1892. On the 29th, Mr. Cordeaux saw several in the forest beyond Hardwick. May 28th, four or five in full song in the forest near Clumber. From May 30th to September 27th, Wood Wrens might be seen every day in the park plantations (Grove).
- Locustella nævia. Grasshopper Warbler.** May 2nd, 1892. E. strong. One, singing, near Grove Moor. On July 7th, I saw a young Grasshopper Warbler, just able to fly.
- Parus ater. Coal Titmouse.** April 19th, 1892. Building, in a small hole, in an ash tree in Castle Hill Wood.
- Sitta cæsia. Nuthatch.** November 27th, 1892. One in Grove Park plantation.
- Motacilla alba. White Wagtail.** April 16th, 1892. I saw two, on the river at Eaton, with several *M. lugubris*. Sept. 24th. Mr. Cordeaux this morning saw a pair of immature White Wagtails on the roof of an outhouse in his garden at Eaton.
- Lanius excubitor var. major. Great Grey Shrike.** A male of the variety formerly known as Pallas's Grey Shrike, *L. major*, was shot by a keeper at Wheatley, on Nov. 27th, 1891. Its stomach contained the remains of a large beetle and shrew mouse.
- Coccothraustes vulgaris. Hawfinch.** This species is exceedingly common in the woods and plantations here throughout the year.
- Chrysomitris spinus. Siskin.** May 28th, 1892. S. To-day, while driving with Mr. Cordeaux in Clumber Park, near the Apley Head Gate, we came upon a small flock of Siskins, feeding in the tops of some larch trees.
- Acanthis rufescens. Lesser Redpole.** January 11th, 1892. Snow. One, in a flock of finches at the moat (Grove); and about this date Mr. Cordeaux saw one at Retford. On May 31st the nest of a Lesser Redpole, with four eggs, was taken in the grounds of the Grammar School, Retford.

Acanthis flavirostris. **Twite.** March 24th, 1892. One, near Retford.

Plectrophanes nivalis. **Snow Bunting.** A male was obtained near Retford, on February 12th, 1891.

Garrulus glandarius. **Jay.** A flock of twelve or more in Castle Hill Wood, on April 16th, 1892.

Alauda arborea. **Wood-lark.** Seen, and heard singing on Gringley Common, May 8th, 1892.

Caprimulgus europæus. **Nightjar.** A female shot near Headon, October 16th, 1891. July 11th, 1892, Mr. Cordeaux heard many in the forest, near Osberton.

Iynx torquilla. **Wryneck.** May 6th, 1892. N.E. On the edge of the forest, near Ollerton.

Alcedo ispida. **Kingfisher.** November 2nd, 1892. One, in a garden, at Retford.

Buteo vulgaris. **Common Buzzard.** One, passing N. at Grove on January 6th, 1892.

Falco peregrinus. **Peregrine.** In the earlier part of June 1891, a female was obtained at Laxton, having struck at a wooden decoy pigeon.

Falco æsalon. **Merlin.** An adult male was seen by the keeper, near Castle Hill Wood, about July 12th, 1891. Another male was seen by Mr. Cordeaux at Babworth, about Feb. 1st, 1892.

Querquedula crecca. **Teal.** Two couple on the river at Eaton. April 2nd, 1892. A male, shot at Mattersey, October 27th.

Fuligula cristata. **Tufted Duck.** August 24th, 1891. Old birds with young, on Clumber Lake. On April 26th, 1892, a pair on the river at Eaton. May 6th. N.E. About twenty pairs on the lake at Clumber (Nat., 1892, p. 186). May 21st. W. A pair, at Eaton. May 28th. S. About twelve pairs, just below the lake, on the river at Clumber. June 27th. About forty males counted, at one place, on Clumber Lake.

Mergus serrator. **Red-breasted Merganser.** Feb. 11th, 1891. A female, shot near Retford.

Columba œnas. **Stock Dove.** A great many pairs breeding in hollow oaks, in Grove Park, as usual.

Turtur communis. **Turtle Dove.** About May 25th, 1892. Mr. Cordeaux heard one at Eaton. June 17th, a pair in the Grove Park plantation. On June 18th, another pair was seen at Lady Wood, near Grove. July 7th, Turtle Doves nesting in Eaton Wood (Cordeaux).

- Porzana bailloni. Baillon's Crake.** On February 13th, 1891, the bird-stuffer at Retford showed me a small Crake, which has since turned out to be this species. It had been obtained at Bolam, near Retford, a few days before, and appears to be the first specimen recorded for the county.
- Rallus aquaticus. Water Rail.** About May 21st, 1892, Mr. Cordeaux heard the note of a Water Rail in a thicket near the river at Eaton.
- Fulica atra. Coot.** Pair swimming with young on the river below Clumber Lake, on June 27th, 1892.
- Charadrius pluvialis. Golden Plover.** Several black-breasted specimens shot in the Idle valley during the autumn of 1891. April 16th, 1892. Flock of about thirty near Eaton. October 22nd. Forty or fifty with Lapwings at Eaton, very noisy.
- Phalaropus fulicarius. Grey Phalarope.** Oct. 20th, 1891. One, 'in nearly completed winter plumage,' shot on the Trent, at Holme, near Newark.
- Scolopax rusticula. Woodcock.** April 16th, 1892. About this date the keepers saw several in the woods and plantations; and some evidently bred. April 22nd, one in Spring Wood, Grove.
- Gallinago cœlestis. Common Snipe.** On March 16th, 1892, Mr. Cordeaux wrote that there were Snipe, in pairs, in the meadows, near the river at Eaton. On April 2nd there were several in the same place 'drumming,' and also on the 16th.
- Gallinago gallinula. Jack Snipe.** 1891. Abundant in a drain near Grove throughout January. On the 13th six were shot there. October 22nd, 1892, one, on the river near Eaton.
- Tringa canutus. Knot.** One, in immature plumage, shot at Newark-on-Trent, on Jan. 20th, 1891.
- Calidris arenaria. Sanderling.** Two or three were seen every morning from July 20th, 1891, until August 19th, at a pool near Gringley Wood. On one occasion only was one seen in the evening.
- Machetes pugnax. Ruff.** On October 14th, 1891, Mr. Cordeaux saw about a dozen—ruff and reeve—flying to and fro, over a partly flooded meadow near Eaton.
- Totanus hypoleucus. Common Sandpiper.** April 30th, 1892. N. One, at a stream between Sturton and Bole. July 10th. One, flying about Clumber Lake.

Totanus ochropus. Green Sandpiper. On Sept. 26th, 1891, an immature female was shot at a pond, near Grove. Oct. 18th, 1892. N.E. One, near Retford.

Totanus calidris. Redshank. On March 16th, 1892, Mr. Cordeaux wrote that there were three pairs in a meadow by the river at Eaton, very noisy; and on April 2nd we counted about twelve pairs in the same place. By May 21st, it was evident by the flight and call-notes of the birds, that there were young about. June 21st. I heard some calling this evening by the river.

Totanus canescens. Greenshank. On the evening of June 30th, 1891, one rose from a pond near Gringley Wood, and flew down to the moat at Grove.

Numenius arquata. Curlew. August 21st, 1891. Five flying over at Grove. September 3rd. Six more passing over S.W. August 1st, 1892. At 5 a.m. a flock of fourteen passed over at Grove. About September 8th, Mr. Cordeaux saw ten passing at Eaton, and on September 9th five passed S. at Grove.

Hydrochelidon nigra. Black Tern. August 27th, 1891. Two settled at a pond here this afternoon.

Larus marinus. Great Black-backed Gull. September 10th, 1891, sixteen passing here, seven in immature plumage. January 24th, 1892, fourteen passed over near Grove Moor, amongst them several immature birds.

Rissa tridactyla. Kittiwake. July 12th, 1891, one flying over near Gringley Wood. December 24th, one on the river at Eaton.

Mergulus alle. Little Auk. One was shot on the Forest, a few miles from Retford, on January 12th, 1891 (Zoologist, 1891, p. 194).

Podiceps cristatus. Great Crested Grebe. On September 3rd, 1892, an immature specimen, with striped cheeks and neck, was obtained near Babworth.

Puffinus anglorum. Manx Shearwater. In the first week in September, 1891, one was caught alive by a collie dog, at Treswell (Zool., 1891, p. 428). On September 10th, 1892, another was caught alive, at Belmoor, near Sutton, and brought in a basket to Retford, where it was killed and preserved. It seemed very lively, biting when a hand was brought near it.

Procellaria pelagica. Storm-petrel. November 10th, 1892. About this date one was obtained near Worksop, where it was preserved.

THE PLANTS OF LECK AND NEIGHBOURHOOD, LANCASHIRE.

LISTER PETTY,

Ulverston.

THE part of Lancashire in which the accompanying list was made is the triangular portion which runs up between Westmorland and Yorkshire; between Kirkby Lonsdale and Ingleton, and whose base is the Lune. The boundaries are, of course, those of the above counties until Greta Bridge is reached, when my line follows the river. Within this area, with elevations of 150 ft. to 2,000 ft., almost every variety of situation—that is, taking into consideration the surface geology—may be found, the highest points being the County Stone on Leck Fell, 2,000 ft., and Gragreth Fell, 2,057 feet. The only stream of importance is Leck Beck, which, rising suddenly in Ease Gill, runs almost straight to the Lune; past Leck Mill, Cowan Bridge, and Burrow (an old Roman station), to Burrow Mill. Anyone seeing it from the bridge at Burrow would have an idea that the local proverb, ‘As rough as Leck Beck,’ was an attempt by our forefathers to malign the stream. It is true, nevertheless. Thousands of tons of stones have been carried down by the (at Burrow Bridge) quiet-looking stream. Large quantities have been used for building purposes, Leck Church, Vicarage, Schools, and many houses. Immense quantities still remain, intermixed with uprooted trees and shrubs at the sides of the Beck, and occasionally form long islands. From whence do all these stones come? Follow the Beck from Long Gill to Leck, and the reserve supply will be seen; besides this will be seen, on the fell ‘pot-holes’ from small to deep, fantastic devices on the limestone, and a perfectly *dry*, stony gill. Across the centre portion of the district runs the old Roman road (10th Iter of Antoninus), scarcely visible in many places shown on the ordnance map of 1850, but unmistakable in others. As usual, the line is perfectly straight, though now represented by a shady lane which is not.* *This* lane is called in my list the ‘Roman road,’ which, so far as I am at present concerned, commences near Collin-Holme, and runs out at Wandle Barn, on the Westmorland boundary. The railway station of Kirkby Lonsdale is in Lancashire, not more than a mile and

* The best account I know of the Roman road is in *Trans. Hist. Soc. Lancs. and Ches.*, vol. i., 1849, pp. 68-76, by J. Just, who mentions the variation of the present lane from the line of the original road.

a half from the town and half a mile from the county boundary. Only about half of the district above sketched has been worked over. Treading in the footsteps of no predecessor, who has printed his list, the aim has been to make as few mistakes as possible. My thanks are due to Mr. J. Cosmo Melvill for confirmations in naming and many suggestions; and to Miss Maudsley for specimens.

Anemone nemorosa L. Below High Bank, Leck. On Roman road.

Ranunculus hederaceus L. Side of stream near High Bank. Stream on low slope of Leck Fell; and other localities.

Ranunculus Flammula L. Side of Leck Beck. Side of stream on Roman road.

Ranunculus acris L. Road-sides. Roman road. Fields about Leck.

Ranunculus repens L. Banks of Leck Beck and road-sides.

Ranunculus Ficaria L. Road-sides; Leck, Cowan Bridge, Overtown.

Caltha palustris L. Sides of Leck Beck. Side of stream on Roman road.

Nasturtium officinale R.Br. Side of Leck Beck. Cant Beck; and in many of the streams in the district.

Barbarea vulgaris R.Br. Road-side, near High Lodge, Leck.

Arabis sagittata DC. Ease Gill.

Cardamine pratensis L. Banks of Leck Beck. Fields about the Green.

Cardamine hirsuta L. Road-sides and wall-tops, Leck. Roman road.

Erophila vulgaris DC. Amongst stones on Leck Fell (1,200 ft.).

Cochlearia alpina Wats. Side of Leck Beck above Cowan Bridge.

Sisymbrium officinale Scop. Road-side near Burrow.

Sisymbrium Alliaria Scop. Road-side near Leck Villa.

Brassica Sinapis Visiani. Road-sides and fields, Leck, Cowan Bridge, Overtown, Burrow.

Capsella Bursa-pastoris Moen. Road- and field-sides about Leck.

Viola canina L. Hedge-banks near Hipping Hall.

Viola sylvatica Fr. Banks of Leck Beck, in the copses.

Viola tricolor L. Road-side, Overtown to Burrow. Near Yenholmes Hall.

- Polygala vulgaris** L. Hedge-bank near High Bank; below Anneside (low slope of Leck Fell).
- Polygala serpyllacea** Weihe, *depressa* Wend. High up on Leck Fell, beyond the highest farm.
- Lychnis alba** Mill. Specimen forwarded to me by Miss Maudsley, of Cowan Bridge—near the Green.
- Lychnis diurna** Sib. Banks of Leck Beck. Roman road and field-sides.
- Lychnis Flos-cuculi** L. Sides of Leck Beck and other streams. Roman road. On the fell, near Anneside.
- Cerastium glomeratum** Thuill. Side of Leck Beck, amongst the undergrowth.
- Cerastium trivale** Link. Side of Leck Beck.
- Stellaria media** Cyr. On Roman road and other road-sides.
- Stellaria graminea** L. Road-side near Leck.
- Stellaria uliginosa** Murr. Side of a stream on Leck Fell, 900 feet, and other boggy stream-sides.
- Arenaria serpyllifolia** L. Road-side, Leck to Cowan Bridge.
- Sagina procumbens** L. Road-sides and field-roads about Cowan Bridge and Leck.
- Spergula arvensis** L. Road-side near Kirkby Lonsdale Station.
- Montia fontana** L. Stream-sides on Leck Fell and Graygarth Fell.
- Hypericum perforatum** L. Banks of Leck Beck and road-sides.
- Hypericum quadrangulum** L. Side of Leck Beck near Leck Mill. Road-side ditch top, Cowan Bridge to Kirkby Lonsdale Station.
- Hypericum humifusum** L. Hedge-bank near Hipping Hall, and similar localities.
- Hypericum pulchrum** L. Road-side, Cowan Bridge to Leck.
- Malva moschata** L. Side of Leck Beck.
- Linum usitatissimum** L. One plant on road-side between Low Lodge and Hipping Hall.
- Geranium phæum** L. Road-side near Burrow, pointed out to me by Miss Maudsley.
- Geranium pratense** L. Road-sides, fields, and on railway embankments from Hipping Hall to Yorkshire boundary.
- Geranium molle** L. Road-sides near Leck, and other road-sides, but not (to me) so obtrusive as in N. Lancashire.

- Geranium dissectum** L. Road-side, Leck to Cowan Bridge. Road-side, near Kirkby Lonsdale Station.
- Geranium lucidum** L. On the 'skew' bridge over the railway near Cowan Bridge. Walls about Hipping Hall.
- Geranium Robertianum** L. Walls and road-sides, Leck; Cowan Bridge; Overtown; Burrow.
- Oxalis Acetosella** L. Hedge-bottoms near High Bank. Banks of Leck Beck. On Roman road.
- Ilex Aquifolium** L. Sides of Leck Beck. Road-side hedges and in copses and woods, about Leck and Cowan Bridge. Hedge, Roman road.
- Acer Pseudo-platanus** L. Cowan Bridge. Leck. Probably planted all through the district when occurring as trees. Many 'bushes' on banks of Leck Beck and hedges; possibly seedlings.
- Ulex europæus** L. Banks of Leck Beck. Roman road. On road-sides towards the Fell.
- Cytisus scoparius** Link. Sides of Leck Beck.
- Ononis repens** L. Railway embankment, between Cowan Bridge and Yorkshire boundary.
- Trifolium pratense** L. On Roman road, and road-sides and fields generally.
- Trifolium repens** L. Roman road.
- Trifolium procumbens** L. Road-side, Leck to Cowan Bridge; and road-sides generally.
- Trifolium dubium** Sibth. Banks of Leck Beck and road-sides and hedge-banks. No *T. filiforme* L. so far as I have seen.
- Lotus corniculatus** L. Banks of Leck Beck, etc. Common enough.
- Lotus uliginosus** Schk. (*L. pilosus* Beeke). Sides of Leck Beck.
- Vicia Cracca** L. Field-hedges near Leck. Roman road.
- Vicia sepium** L. Near Leck, in hedge.
- Vicia sativa** L. Hedge-bottom near Cowan Bridge. A few plants.
- Lathyrus pratensis** L. Side of Leck Beck. Roman road.
- Prunus communis** Huds. Side of Leck Beck. Roman road, hedges, and elsewhere.
- Prunus Avium** L. Banks of Leck Beck, and trees in the woods.
- Prunus Padus** L. In hedge, Yenholmes Hall to County Stone (towards Burton-in-Lonsdale), with *P. communis*; and in hedges scattered through the district.
- Spiræa Ulmaria** L. Side of Leck Beck. Hedge-bottoms, Roman road.

- Rubus Idæus** L. Wood near Park House. Side of Leck Beck, Roman road, etc.
- Rubus Chamæmorus** L. Leck Fell, 1,800 feet. Recorded by Johnson in the appendix to his edition of Gerarde's Herball, 1633, p. 1630, as 'on Graygreth, a high fell on the edge of Lancashire;' possibly my locality. (Not found, so far as I know, in North Lancashire.)
- Geum urbanum** L. Sides of Leck Beck. Roman road and generally.
- Geum intermedium** Ehrh. Seen once only, hedge-side between Whoop Hall and Kirkby Lonsdale Station.
- Geum rivale** L. Sides of Leck Beck. Roman road.
- Fragaria vesca** L. Banks of Leck Beck. Roman road and other hedge-banks.
- Potentilla Fragariastrum** Ehrh. Hedge-banks near Hipping Hall. Near Overtown.
- Potentilla Tormentilla** Neck. Roman road and other road-sides.
- Potentilla reptans** L. Hedge-banks near Ireby, etc.
- Potentilla Anserina** L. Roman road and road-sides generally.
- Alchemilla vulgaris** L. Road-sides and fields about Cowan Bridge and Leck.
- Poterium Sanguisorba** L. Banks of Leck Beck and in the pastures.
- Rosa arvensis** Huds. Road-side, Cowan Bridge to Park House. Side of Leck Beck.
- Pyrus Aucuparia** Gaert. Roman road and in hedges and woods.
- Cratægus oxyacanthoides** Thuil. Hedge between railway bridge and Yenholmes Hall.
- Cratægus monogyna** Jacq. Roman road. Side of Leck Beck, etc. Seems to be the usual hedge form.
- Saxifraga tridactylites** L. Walls at Leck. Walls at Hipping Hall.
- Saxifraga hypnoides** L. Ease Gill.
- Chrysosplenium oppositifolium** L. Stream-side near High Bank and in many of the damp hedge-banks and stream-sides.
- Ribes Grossularia** L. Side of Leck Beck. Hedges near Hipping Hall. Ireby.
- Ribes rubrum** L. Side of Leck Beck. Hedge, Cowan Bridge to Kirkby Lonsdale Station, in fruit.
- Sedum telephium** L. Road-side, Leck to Cowan Bridge. Road-side near Ireby.

- Sedum album** L. Walls about Leck, no doubt introduced.
- Sedum acre** L. Walls at Leck and Ireby.
- Sempervivum tectorum** L. On roof of an out-house at Collin-Holme.
- Callitriche (stagnalis Scop.?)** Stream near Hipping Hall.
- Epilobium hirsutum** L. Road-side ditch on Roman road.
- Epilobium montanum** L. Road-side near Leck.
- Circæa lutetiana** L. Copse, side of Leck Beck. Road-sides, frequent.
- Sanicula europæa** L. Amongst the undergrowth, side of Leck Beck. Under the trees near Anneside on Leck Fell. Ease Gill.
- Apium nodiflorum** Reichb. Stream, side of Roman road.
- Ægopodium Podagraria** L. Side of Leck Beck above Cowan Bridge.
- Conopodium denudatum** Koch. Banks of Leck Beck, and road-sides and fields.
- Myrrhis Odorata** Scop. Road-side near Leck Church. Side of Leck Beck, near Leck. Overtown. Road-side at Ireby, plentiful.
- Anthriscus sylvestris** Hoffm. Side of Leck Beck.
- Heracleum Sphondylium** L. Sides of Leck Beck and in the fields.
- Daucus Carota** L. Side of Roman road.
- Hedera Helix** L. On Roman road, and on trees, hedges, and walls.
- Sambucus nigra** L. In hedge, Roman road. Sides of Leck Beck and in hedges throughout the district.
- Viburnum Opulus** L. Hedges on Roman road. Sides of Leck Beck. Hedge, road-side to Kirkby Lonsdale Station, etc.
- Lonicera Periclymenum** L. Hedges, Roman road and about Leck. Hedge near High Bank, the highest point I have seen it here, circ. 650 feet.
- Galium Cruciata** Scop. Roman road.
- Galium verum** L. Hedge-bank near Todgilber. Side of Leck Beck near Leck Mill.
- Galium Mollugo** L. Road-side, Cowan Bridge to Kirkby Lonsdale Station. Road-side past Yenholmes Hall.
- Galium saxatile** L. Hedge-banks near Cowan Bridge, and generally from Roman road up to the Fells.

- Galium palustre** L. Side of stream on Roman road and side of Leck Beck.
- Galium Aparine** L. Near Cowan Bridge. On Roman road and generally.
- Asperula odorata** L. Park Wood.
- Sherardia arvensis** L. Amongst stones, banks of Leck Beck above Cowan Bridge.
- Valeriana officinalis** L. Roman road.
- Scabiosa arvensis** L. Sides of Leck Beck; and meadows, hedge-banks and road-sides.
- Bellis perennis** L. Common everywhere, to high on the fells.
- Achillea Millefolium** L. On Roman road and road-sides and fields, common.
- Chrysanthemum Leucanthemum** L. Roman road and generally in fields and road-sides.
- Tanacetum vulgare** L. Very abundant about the beck at high end of Ireby.
- Tussilago Farfara** L. In the copse, side of Leck Beck; and road-sides, common.
- Senecio vulgaris** L. Roman road, common.
- Senecio sylvaticus** L. Side of Leck Beck and amongst the undergrowth.
- Senecio Jacobæa** L. Roman road and other road-sides and fields.
- Senecio aquaticus** Huds. Side of Leck Beck.
- Arctium minus** Schk. On broad grassy verge of Leck Beck above Cowan Bridge, and on road-sides.
- Cnicus lanceolatus** Hoffm. Roman road and marginal sward of Leck Beck.
- Cnicus arvensis** Hoffm. Banks of Leck Beck. Road-side, Cowan Bridge to Jogging Bridge.
- Centaurea nigra** L. Roman road, etc., common.
- Lapsana communis** L. Roman road. Road-side near Ireby.
- Crepis virens** L. On walls and hedge-banks about Cowan Bridge and Leck.
- Hieracium Pilosella** L. Road-sides and hedge-banks about Cowan Bridge and Leck.
- Hieracium boreale** Fr. Road-side between Overtown and Burrow.
- Hypochæris radicata** L. Hedge-banks and walls about Cowan Bridge and Burrow.

- Leontodon hispidus** L. Road-sides about Cowan Bridge and Leck.
- Leontodon autumnalis** L. Bank of Leck Beck.
- Taraxacum officinale** Web. Road-sides and fields, common.
- Sonchus oleraceus** L. Hedge-bank near Hipping Hall.
- Campanula latifolia** L. Roman road. Road-side near Overtown. Road-side, Cowan Bridge to Westmorland boundary.
- Campanula rotundifolia** L. Side of Leck Beck; near Yenholmes Hall; etc.
- Vaccinium Vitis-idaea** L. With *Rubus Chamemorus* on Leck Fell.
- Vaccinium Myrtillus** L. Leck Fell and many hedge-banks.
- Calluna Erica** DC. Leck Fell. Graygreth Fell.
- Erica Tetralix** L. Leck Fell.
- Erica cinerea** L. Leck Fell.
- Primula vulgaris**. Banks of Leck Beck; Roman road; near Burrow.
- Lysimachia nemorum** L. About sides of Leck Beck.
- Fraxinus excelsior** L. Banks of Leck Beck. In hedges and many isolated trees.
- Myosotis palustris** With. Side of a back-water of Leck Beck, near Burrow.
- Myosotis arvensis** Hoffm. Road-side near Ireby. (Grass-road at Low Gale.
- Myosotis versicolor** Reichb. Side of Leck Beck and other stream-sides.
- Calystegia Sepium** R.Br. Hedge near Overtown
- Solanum Dulcamara** L. Side of Leck Beck.
- Verbascum Thapsus** L. Fell Lane, near Leck (Miss Maudsley).
- Linaria Cymbalaria** Mill. Walls at Ireby.
- Linaria viscida** Moench. On railway line, from Cowan Bridge to Yorkshire boundary. Plentiful in the six-foot.
- Scrophularia nodosa** L. On Roman road. Road-side near Hipping Hall. Road-side between Todgilber and Ireby.
- Mimulus luteus** L. Margin of a back-water of Leck Beck, near Burrow.
- Digitalis purpurea** L. Roman road and other road- and field-sides.
- Veronica arvensis** L. Field-roads and wall-tops, Leck and Cowan Bridge.

- Veronica serpyllifolia** L. Roadsides. Cowan Bridge to Kirkby Lonsdale Station. 1,800 feet on Leck Fell.
- Veronica officinalis** L. Bank of Leck Beck, below Cowan Bridge.
- Veronica Chamædryas** L. Roman road. Banks of Leck Beck and road-sides.
- Veronica Anagallis** L. In the stream near the Green. In the stream that divides the counties (Lancs. and Yorks.) near Stainderber Barn. In stream between Hipping Hall and the Bar (it has no name that I could find).
- Veronica Beccabunga** L. Side of stream, Roman road. Side of Leck Beck. 1,600 feet on Leck Fell.
- Euphrasia officinalis** L. Banks of Leck Beck. Leck Fell (not *gracilis* Fr.) and road-sides.
- Bartsia Odontites** Huds. Road-side near Kirkby Lonsdale Station.
- Pedicularis palustris** L. On Leck Fell, near Anneside.
- Rhinanthus Crista-galli** L. Roman road. Fine specimens in some of the hay grass—too fine to please the farmer.
- Pinguicula vulgaris** L. Various localities on Leck Fell.
- Mentha hirsuta** L. Sides of Leck Beck. Grassy bank of Ireby Beck.
- Thymus Serpyllum** Fr. Banks of Leck Beck and upon the Fell.
- Nepeta Glechoma** Benth. Banks of Leck Beck and hedge-banks.
- Prunella vulgaris** L. Roman road and fields and road-sides.
- Stachys Betonica** Benth. Roman road and other road-sides.
- Stachys sylvatica** L. Copses about Cowan Bridge and Leck, as often outside as in them.
- Galeopsis Tetrahit** L. Road-side, Overtown to Burrow.
- Lamium purpureum** L. Roman road.
- Teucrium Scorodonia** L. Sides of Leck Beck and in almost every lane.
- Ajuga reptans** L. Near High Bank. Sides of Leck Beck. Roman road.
- Plantago major** L. Road-sides and fields, Leck, Cowan Bridge, Overtown, Burrow, Ireby.
- Plantago media** L. Roman road. Cowan Bridge.
- Plantago lanceolata** L. Road-sides, Cowan Bridge and generally.

- Chenopodium album** L. Road-sides and rubbish-heaps about Leck.
- Chenopodium Bonus-Henricus** L. Fell Side ; High Bank ; Low House ; Leck ; all outside houses. Road-side, Jogging Bridge to Yenholmes Hall.
- Polygonum aviculare** L. Road-side, Cowan Bridge.
- Polygonum Persicaria** L. Road-sides, Leck, Cowan Bridge, Yenholmes Hall.
- Polygonum Bistorta** L. Side of lane near Leck Villa. Bank of Leck Beck above Cowan Bridge. Burrow.
- Rumex Acetosa** L. Roman road and other road-sides.
- Rumex Acetosella** L. Roman road, etc.
- Euphorbia Helioscopia** L. Oat-field near Yenholmes Hall.
- Mercurialis perennis** L. Cowan Bridge. Leck. Burrow.
- Ulmus campestris** Sm. Sides of Leck Beck. Some fine trees at Leck and in Burrow Park.
- Humulus Lupulus** L. On a wall at Cowan Bridge (not planted). On a wall at Overtown end of Roman road.
- Urtica dioica** L. From Roman road upwards.
- Alnus glutinosa** L. Sides of Leck Beck. Roman road and in hedges.
- Corylus Avellana** L. Hedges. Leck, Cowan Bridge, Roman road.
- Quercus Robur** L. Trees in fields and hedges and woods. Leck, Cowan Bridge, Roman road, Burrow Park, etc.
- Fagus sylvatica** L. Hedges, Roman road. Fine trees in Burrow Park. Single trees occasionally.
- Salix fragilis** L. As bushes, side of Leck Beck.
- Salix Smithiana** Willd. Side of Leck Beck.
- Salix Capræa** L. Roman road and in hedges about Leck.
- Populus nigra** L. Amongst the 'bushes,' banks of Leck Beck, below Cowan Bridge. Planted?
- Listera ovata** R.Br. In plantation near the skew bridge, near Cowan Bridge. Railway Embankment between Cowan Bridge and the Green.
- Orchis mascula** L. Road-side, Roman road and in the fields, frequent.
- Iris Pseudacorus** L. Stream-side, Roman road.
- Galanthus nivalis** L. In some of the old orchards (Miss Maudsley).

- Tamus communis** L. In hedges, Roman road.
- Allium ursinum** L. Banks of Leck Beck, etc.
- Scilla nutans** Sm. Under the trees, bank of Leck Beck.
- Juncus bufonius** L. Leck Fell. Pasture at Low Gale.
- Juncus squarrosus** L. Abundant on Leck Fell.
- Juncus effusus** L. Roman road. Side of Leck Beck.
- Juncus conglomeratus** L. Roman road. Side of Leck Beck.
Near Anneside on Leck Fell.
- Luzula campestris** DC. Leck Fell. Fields about Cowan
Bridge and Leck.
- Luzula multifida** Lej. Leck Fell.
- Arum maculatum** L. Amongst the undergrowth, side of Leck
Beck. Hedge-side near Hipping Hall.
- Lemna minor** L. Road-side stream between Whoop Hall and
Westmorland boundary.
- Eleocharis palustris** R.Br. Leck Fell.
- Eriophorum vaginatum** L. 1,700 feet on Leck Fell.
- Carex remota** L. Sides of Leck Beck.
- Carex glauca** Murr. Side of Leck Fell near Low Gale. 900 feet
on Leck Fell.
- Anthoxanthum odoratum** L. Road-sides and fields near Leck.
- Alopecurus geniculatus** L. Road-side near Leck.
- Alopecurus pratensis** L. Road-side, Leck to Cowan Bridge,
and in the fields.
- Phleum pratense** L. Fields about Cowan Bridge and Leck.
- Agrostis vulgaris** With. Fields about Cowan Bridge and Leck.
Wall-top near Jogging Bridge.
- Deschampsia cæspitosa** Beauv. Roman road.
- Holcus lantanus** L. Roman road and wall-tops about Leck.
- Trisetum flavescens** Beauv. Banks of Leck Beck below
Cowan Bridge.
- Arrhenatherum avenaceum** Beauv. Road-side near Fell
Side. Road-side, Cowan Bridge to Kirkby Lonsdale Station.
- Cynosurus cristatus** L. Common everywhere from Roman
road to top of Leck Fell.
- Melica uniflora** Retz. In wood on road to Park House.
- Dactylis glomerata** L. Everywhere common—fields and road-
sides.
- Briza media** L. Banks of Leck Beck. Leck Fell.

- Poa pratensis** L. Road-sides and fields, Leck and Cowan Bridge.
- Poa trivialis** L. Fields. Leck, Cowan Bridge, etc.
- Festuca elatior** L. In fields near Collon Holme. On Leck Fell (near Fell Side), 1,000 feet.
- Festuca pratensis** ? Side of Leck Beck.
- Bromus sterilis** L. Side of wood near Park House.
- Bromus mollis** L. Road-sides and fields. Leck and Cowan Bridge.
- Lolium perenne** L. Side of Leck Beck. Common everywhere in the fields and road-sides.
- Lolium italicum** Braun. A few plants on Roman road.
- Agropyron caninum** Beauv. Amongst the 'bushes,' side of Leck Beck above Cowan Bridge.
- Nardus stricta** L. Leck Fell.
- Pteris aquilina** L. From Roman road to Leck Fell.
- Lomaria Spicant** Desv. Leck Fell. Ease Gill.
- Asplenium Adiantum-nigrum** L. Wall at Hipping Hall and on the bridge.
- Asplenium viride** Huds. Ease Gill.
- Asplenium Trichomanes** L. Walls at Hipping Hall. Ease Gill.
- Asplenium Ruta-muraria** L. Walls at Leck. Overtown. Burrow. Ease Gill.
- Athyrium Filix-fœmina** Roth. Roman road and side of Leck Beck.
- Athyrium Filix-fœmina** VAR. **Rhœticum**. Roman road.
- Scolopendrium vulgare** Sym. Ease Gill.
- Cystopteris fragilis** Bernh. On bridge at Hipping Hall. On bridge over Eller-beck. Ease Gill.
- Lastræa Oreopteris** Presl. Leck Fell. Ease Gill.
- Lastræa Filix-mas** Presl. Roman road. Sides of Leck Beck, and hedges about Leck.
- Lastræa dilatata** Presl. Road-side near Burrow.
- Polypodium vulgare** L. Roman road. Side of Leck Beck, etc.
- Phegopteris Robertiana** A.Br. Ease Gill.
- Phegopteris polypodiodes** Fée. Under the trees near Anneside on Leck Fell.
- Equisetum arvense** L. Roman road and other damp places.
- Chara fragilis** Desv. In a small back-water of Leck Beck below Cowan Bridge.

BIRD-NOTES FROM THE HUMBER DISTRICT IN THE WINTER OF 1892-1893.

(Continued from page 14.)

JOHN CORDEAUX, M.B.O.U.,
Eaton Hall, Retford.

Anser segetum. Bean Goose. One was shot on Dec. 3rd by Stubbs, the wild-fowler, at North Cotes, from a party of four. This, which was a very fine example, was sent by Mr. Caton Haigh to Professor Newton.

Scolopax rusticula. Woodcock. January 4th, 1893, a very considerable arrival on night of 3rd, or early morning of 4th, with a N.E. wind. This flight on the English coast extended, as far as my information goes, from Flamborough Head to the mouth of the Thames. Great numbers also occurred along the East coast of Scotland on the same date, January 3rd and 4th, Wind N.N.E. These Scotch birds may not have been all immigrants but also emigrants, representing a local movement from the interior to the coast, brought about by the arctic weather at the commencement of the year.

This arrival of Woodcock in January is interesting, as so far this has been an exceptionally poor woodcock season for the sportsman in Great Britain. The first flight has already been recorded in 'The Naturalist,' 1893, p. 10, on October 14th and 15th, but no second, or November flight, was observed on the east coast. The January flight of cock, therefore, may be either the delayed 'second flight'—unless this has passed over unobserved—or may have consisted of frozen-out birds from the Continent, which, but for an exceptionally severe season abroad, would not have visited us.

In the winter of 1890-91 we had three distinct flights of Woodcock, namely in October, November, as is the rule, and a third flight on January 12th. It is singular that no Woodcock whatever have been observed at Heligoland this winter.

Ampelis garrulus. Waxwing. Early in January, and subsequent to the flight of Woodcock, a sprinkling of Waxwings arrived, and they have now been recorded in all the eastern counties, from Northumberland to Kent, and also in Cambridgeshire. I have heard of at least ten Lincolnshire examples; one which I saw in Mr. Jeffrey's shop at Grimsby was an adult full-plumaged male; another was found dead by a boy, on the road-side, in the parish of North Thoresby, late in February.

Somateria mollissima. Common Eider. A magnificent adult male, in full plumage, now in Mr. Hewetson's collection, was picked up dead on the beach near Spurn, on January 16th, by the postman. It had evidently been shot at sea and wounded in the head.

Mergus merganser. Goosander. A remarkably fine old male, also in most perfect plumage, and excessively fat, was shot near Hornsea on January 14th; it was set up by Mr. Loten, of Easington.

Acanthis linaria. Mealy Redpole. A few were seen by Mr. Hewetson on Kilnsea Warren, on February 5th. One had been brought to Mr. Loten in the preceding week. One in my possession was shot at Out-Newton on January 16th. On February 25th, Mr. Hewetson and myself observed a most beautiful Redpole, as regards size and colour, on Kilnsea Warren. It was feeding on the margin of a rain-pool along with some very white Snow Bunting, but remained after these had flown. At first sight I thought it was a wounded Snow Bunting, but on approaching within fifteen feet saw it was a Redpole. The general colour was pure white, the darker portion being a few cinereous streaks on the back and head, the wings and tail somewhat darker, but all these dark markings very light and subdued, the underparts and rump pure white, but suffused with a delicate flush of rose—like an after-glow—a blood-red patch on forehead. I watched it for some time with the eye, and also through the glass, and have rarely seen anything prettier amongst birds, more particularly when the charming little fellow was clinging to the sides of a dead thistle. The chief peculiarities were its size and its exceeding whiteness, and the lovely pink suffusion on rump and breast. It probably represented a wanderer from a very high latitude, and may be referred to *Acanthis hornemanni* of Holböll, the *Linaria canescens* of Gould. My readers will find an excellent illustration of this in Plate 5, Hancock's 'Birds of Northumberland.'

Turdus pilaris. Fieldfare. February 4th, a very considerable immigration about Kilnsea and Easington, scattered all over the country and swarming in every grass field. Mr. M. Bailey, in this journal, has already noticed the great arrival at Flamborough. I saw numbers of fine old full-plumaged birds near Kilnsea on February 25th.

Dendrocopus major. Great Spotted Woodpecker. Altogether I have heard of four occurrences during the winter in the Lincolnshire marsh district, two of which I have seen.

- Bernicla brenta. Brent Goose.** Numerous at the entrance of the Humber since Christmas. On February 25th, I watched through the glass a 'gaggle' of about seventy feeding in shallow water, with an ebb tide, over a small bed of shore grass (*Zostera*), in the bay at Spurn; these were small and dark in appearance, and their distance from the shore was not over one hundred and fifty yards. Two-thirds of the flock had only their rumps above the water, the rest of the body below the surface, as they pulled and nibbled the grass; the remainder swimming sentry till their turn came. These geese were feeding most greedily, and seemed little alarmed, although we stood in full view. All the time they kept up a continuous musical cry, like a pack of hounds. The eagerness with which the geese fed made me exclaim to Mr. Hewetson, 'They must be expecting a storm,' and in less than twelve hours it came from E. and N.E., with heavy driving snow and rain. Stubbs, of Tetney, shot three white-bellied Brent Geese from a flock of five, in January, and one of these was sent by Mr. Haigh to the Edinburgh Museum. Mr. Haigh says he has never seen more than five or six of them together, and then always by themselves.
- Fuligula ferina. Pochard.** Stubbs shot four out of a bunch of five, on January 9th, at Tetney; three of them were beautifully plumaged males.
- Mareca penelope. Wigeon.** Have been exceedingly plentiful during the winter on the Humber. February 25th, the males are now in perfect plumage.
- Turdus torquatus. Ring-Ousel.** On Feb. 25th Mr. Hewetson and myself, when out for a walk, saw two Ring-Ousels, adult males, in a paddock, near the Coastguard station, at Kilnsea. I was anxious to make a nearer acquaintance with these, as, on the grass, and also in flight, they showed much more white on the wing than I recollect having seen on any of the Ring-Ousels obtained in the same locality in the autumn, several skins of which I have now before me. These may have been the *T. alpestris* (C. L. Brehm) from central or southern Europe. We borrowed a gun at a neighbouring farm, but after following them from place to place, had to abandon the pursuit. The occurrence of Ring-Ousels in February is in itself an interesting fact, of which there is no previous record in the district.
- Sturnus vulgaris. Starling.** On February 25th, Mr. Hewetson shot eight from a large flock on grass-land close to the coast, at Kilnsea. They were all the so-called purple-headed race which comes to us on migration from the east in the autumn, and

were even more richly coloured on the head than in the very beautiful figure of this Starling given by Lord Lilford in his 'Illustrations of British Birds,' No. xxii. In these Kilnsea examples, the only tinge of green about the head was on the auriculars, the colour of the remainder being perhaps best expressed as a purple-lake, with the feathers of the flanks under the wings a deep violet, and much richer than these parts when compared with the examples of the green-headed race (*S. vulgaris*) procured in the same week. These former appear to be intermediate between the Common Starling and *S. menzbieri*, in which last the ear-coverts are said to be purple.

It will be seen that the outbreak of almost arctic severity over Europe at the end of 1892 and commencement of 1893, correlates with a great rush of various species on the east coast. First we have Woodcock on January 4th, followed by Waxwing, Mealy Redpole, and an enormous inrush of Snow Bunting, old Fieldfare, and Blackbirds, with a few Ring-Ousels. At the same time, all wild fowl, as geese and duck, have been exceptionally numerous.

March 3rd, 1893.

NOTE—LEPIDOPTERA.

Variation in Yorkshire Lepidoptera.—At a meeting of the Entomological Society of London, held February 8th, 1893, Mr. G. T. Porritt exhibited two varieties of *Arctia lubricipeda* from York; an olive-banded specimen of *Bombyx quercus* from Huddersfield; and a small melanic specimen of *Melanippe hastata* from Wharnccliffe Wood, Yorkshire.

NOTE—FISHES.

Herrings confined in a Pond.—Adjacent to the estuary of the Humber, and not a stone's throw from New Holland on the M. S. and L. railway, there exists a pond, some three acres in extent, which has been excavated to furnish clay for the neighbouring brickyard. Communication is effected with the Humber by means of a clew, which is so contrived that water may come in occasionally but not go out. The water is therefore necessarily of a brackish nature, but grows a coarse aquatic vegetation, which enables it to sustain animal life. Among its inhabitants may be noticed *Salmo trutta*, *Osmerus eperlanus*, *Platessa flesus*, and *Clupea harengus*. These last seem to breed here every season and are somewhat dwarfed, the largest not exceeding five or six ounces, owing probably to the limited food supply of their habitat. They rise constantly for flies, and are readily taken by rod and line, the cockle proving the most seductive lure. Hull anglers, keenly alive to the novelty of capturing herrings, cross the Humber every winter in dozens for that purpose, at which season they feed best. Locally they are known as pilchards, but the back fin and other reliable distinguishing marks proclaim them to be the herring.—H. MOODY FOSTER, Hull, Dec. 8th, 1892.

This interesting note recalls to mind Yarrell's record, as quoted in the 'Handbook of the Vertebrate Fauna of Yorkshire,' p. 129, of Col. Meynell, of Yarm, keeping Smelts (*Osmerus eperlanus*) for four years in a freshwater pond having no communication with the sea, where they continued to thrive and propagated abundantly. When the pond was drawn, the fishermen of the Tees considered that they had never seen a finer lot of Smelts, there being no loss of flavour or quality.—W.D.R.

THE CRAVEN HIGHLANDS.

The Craven and North-West Yorkshire Highlands. | Being a complete account | of the History, Scenery, and Antiquities | of that Romantic District. | By | **H. Speight**, | (Johnnie Gray), | Author of "Through Airedale from Goole to Malham," etc. | Illustrated. | London : | Elliot Stock, . . . 1892. | . . .

This charming book, which is got up in a very handsome green cloth case, on which is given a view of Catterick Force, extends to 470 octavo pages, every line of which is of value or interest. We do not remember to have seen a more perfect work of its kind. Throughout it bears the marks of close practical acquaintance with every nook and corner of the very extensive tract of country which is included, as well as of unwearied industry and indefatigable research among books and documents. There scarcely seems to be a fact connected with any locality in a topographic sense of which our author does not appear to be in some way or other cognizant, so that as regards matters of fact or circumstances of local interest the book may fairly be regarded as being what it is described on its title-page, 'complete.' Its literary style is such as to add considerably to its merit. The book is eminently readable, with a slight sprinkling of anecdotal digression, but without any descent to the wordiness and diffuseness which so often makes a local guide-book wearisome to the reader. Mr. Speight succeeds in so keeping the attention of his readers as to carry them with him from place to place, and in such a manner as to make it difficult to lay the book down before finishing it. A native of the district, our author still keeps his local patriotism well within bounds, and sound judgment reigns supreme throughout. Little is said in praise but what will be amply endorsed by others who have had the opportunity of forming their opinions from the independent and unbiassed standpoint of a casual visitor. The illustrations to the book, mostly Meissenbach reproductions, strike us as being exceptionally clear and good, and in several instances (e.g. the Devil's Bridge at Kirkby Lonsdale, pp. 274-5) are exquisitely beautiful.

Scientifically, Mr. Speight has interspersed his work with references to the natural phenomena of the district, its geology and physical configuration, its flora, and to a certain extent its fauna also. There are several most valuable prefixes to the book, most of which are purely historical in scope, but those giving the exact heights of mountains, roads and passes, of towns, villages and hamlets, and particularly the tables, absolute and comparative, of the rainfalls registered in 1889, 1890, and 1891, are most useful from our point of view. Amongst other subjects which receive attention we may note that the contents of the Giggleswick Museum, the ancient

canoe from Giggleswick Tarn, the explanation of the mechanism of the Ebbing and Flowing Well, the various Caves which abound in this permeable limestone tract, the scientific worthies of the district, which include names so distinguished as Faraday and Sedgwick (it is by the way, news to us to learn that Faraday is dubbed 'Sir'), the Craven faults, a note by Mr. J. W. Carter on the Coleoptera of Ingleborough Hill, Mr. Baker's notes on the plants of the same mountain and of Penyghent, the birds of Malham Moor, and not a few notes on the florulas of particular spots, all receive passing attention. The only piece of adverse criticism that occurs to us is the author's frequent use of the title 'Professor' for individuals who do not hold such a post. In these days of professors of sleight-of-hand, swimming, etc., it scarcely appears to us to be so much a title of honour that it need be applied to any one other than the holder of an endowed chair in one of our universities. But this is a very small point, and does not detract from the merit of a work which we regard as a model well worthy of imitation in other districts.—W.D.R.

NOTE—BOTANY.

Botanical 'Waifs' in Cumberland. — Under this title Mr. W. Hodgson, A.L.S., of Workington, has reprinted his interesting paper from the 'Transactions of the Cumberland and Westmorland Association,' on the flora of the ballast-heaps, and other suchlike places in Cumberland. To quote, with the limited space at disposal, is dangerous. Species from Chili, Montevideo, Rosario, Brazil, California and other parts of the United States, Italy, Sicily, Sardinia, Corsica, etc., being represented. Two only shall be given. *Nicotiana tabacum* (tobacco), on the accumulation of ashes and rubbish at the Derwent Tin Plate Works, and from the same locality a plant of *Lycopersicum esculatum* (tomato), and 'at Parton, during the summer of 1889,' several plants of tomato appeared, 'the fruit developed to considerable size.' There must have been a good bottom heat, or the plants would not have done so well in the open air. One paragraph from a paper which would yield many, must suffice: 'In bringing these remarks to a conclusion, allow me briefly to refer to a singular side issue which has been raised in connection with the find at the Derwent Tin Plate Works in 1889. I had made some reference to the discovery' to 'Mr. H. Thompson, F.R.C.V.S., of Aspatria . . . and he was anxious to know the degree of heat to which the material would be exposed, when in use at the Tin Plate Works.' Approximately it was 85° to 90°. 'The question was then started as to what amount of heat some of these necessarily very minute seeds—those of *Mentha Requiem* for example—were calculated to sustain, without injury to their germinating power. Mr. Thompson, who is president for the year of an association of his professional brethren, at their annual meeting, held in Edinburgh, made incidental reference to the facts communicated to him by myself. He was asked by a gentleman present—Mr. Phillips . . . whether the seeds might not have been wind-blown from plants in the immediate neighbourhood of the Tin Plate Works. The president's reply distinctly negatived the suggestion; whereupon Mr. Phillips replied that, taking into account the heat and friction described without injury to the germinating powers of the seeds, it was not unreasonable to suggest that the bacilli of anthrax might be contained in cotton cake, surviving the heat, etc. The question thus raised remains for solution.' Possibly Mr. Hodgson may extend his inquiries, and publish them in a more accessible place than the transactions of a local society.—LISTER PETTY, Ulverston, February 17th, 1893.

THE YORKSHIRE BOULDER COMMITTEE AND ITS SIXTH YEAR'S WORK.

THOS. TATE, F.G.S.,

Leeds; Honorary Secretary to the Committee.

THE Yorkshire Boulder Committee have comparatively few erratic blocks to report this year, nearly all the known examples having been previously recorded. This being the case, they have been at liberty to make important advances in their method of research, and to devise new modes of operation.

During the year their attention has been mainly given to maturing a scheme for the careful and exact exploration of special glacial districts not hitherto investigated. They began with the valley of the River Calder, including its tributaries, from its source to its junction with the River Aire near to Castleford. This valley has been subdivided into geographical areas, each of which is now placed in charge of willing helpers, under the supervision of a sub-committee. Exceptionally good work has already been done by Mr. John Burton, of Horbury, who, patiently following the excavations necessary for the new sewage works, has collected an extensive series of typical boulders, the identification of which promises to lead to some valuable results. These the committee hope to embody in their next annual report.

They intend also to present a similar report on the Sedbergh, Garsdale, and Dentdale district, now being investigated after the same fashion.

During the past year a sub-committee has been engaged upon the preparation of a new and enlarged Glacial Map of Yorkshire, on a scale of one inch to the mile; towards the cost of which map this committee gratefully acknowledges a grant of £3 10s. od. from the Erratic Blocks Committee of the British Association.

The following erratic blocks have been recorded during the past year:—

Reported by Mr. J. J. MARSHALL, Chemist, Market Weighton.

On Mr. Brough's farm, Reformatory Road, Market Weighton, an isolated Jurassic sandstone boulder, 19 × 13 × 10 inches, angular with rounded edges; no rocks like it near, but gravels and sands of a similar character; recently found when ploughing, now removed to near the farmhouse.

Reported by Mr. JOHN STEARS, Hull.

On England Hill farm, near Winestead, Holderness: a mountain limestone boulder $4.3 \times 2.3 \times 1.7$ feet, sub-angular, resting on a gravelly bed; under 50 feet above sea-level. Some years ago a larger boulder of the same colour, weighing several tons, was found in the same field and broken up for road-metal.

Reported by Mr. JOHN H. PHILLIPS, Hon. Sec. of the Scarborough Philosophical Society.

GROUP OF ERRATIC BOULDERS.

In the garden of King's Cliff Hospital, Scarborough, 58 boulders of all shapes and sizes from 4 feet 8 inches and 26 inches in circumference up to 11 feet 8 inches by 9 feet 6 inches; striations nearly illegible. They include four basalts, two hard limestones, and 52 Shap Fell granites from half a hundredweight up to two tons in weight.

Collected by their former owner, Mr. John Wharton, from the coast and highways in the immediate neighbourhood.

The estate has recently been sold and is to be converted into a winter garden; but it is hoped this fine group of erratics will be transferred to the Scarborough Museum.

Reported by Mr. THOS. TATE, F.G.S.

RIBBLESDALE.—Swanside Wood, east of Sawley Abbey, on the right bank of Swanside beck; altitude 350 feet.

I.—'Brockram,' somewhat bleached, $14 \times 7 \times 6$ inches, rounded. May be from the Permian conglomerate of Black Burton (the Leck Beck brockram), which is indistinguishable from that of the vale of Eden.

II.—Black limestone breccia, richly veined with calcite and limonite; $12 \times 6 \times 6$ inches; very angular. Parent rock unknown.

INGLETON.

I.—Right bank of Dale Beck, a little above Phillip's Dyke; altitude 470 feet. Helmsgill Lamprophyre, $6' \times 3' 3'' \times 1' 7''$; subangular.

II.—Right bank of Dale Beck, near the Mealbank limekiln; altitude 400 feet. Helmsgill Lamprophyre, 6ft. \times 5ft. \times 3ft. 6in.; angular.

Microscopic sections of these two boulders are described and figured in Proceedings of Yorkshire Geological and Polytechnic Society, vol. xi. p. 311, plates xiv. xv.

DEWSBURY.—Gasworks, Savile Town; altitude 125 feet.

I.—Ennerdale granophyre, $12 \times 8 \times 6$ inches; well worn.

II.—Buttermere granophyre, $7 \times 5 \times 5$ inches; rounded.

Church Street, opposite County Court; from excavations for main drainage:

III.—Ennerdale granophyre, $16 \times 7 \times 4$ inches; oval, very much worn.

HORBURY BRIDGE.—Altitude 100 feet.

I.—Ennerdale granophyre, $7 \times 4 \times 4$ inches; well worn.

WAKEFIELD.—Thornes Lane, below suspension bridge; altitude 76 feet.

I.—Ennerdale granophyre, $6 \times 4 \times 3$ inches; well rounded.

TEES SIDE.—Shap granite, Armboth quartz felsite, and Carrock Fell gabbro have been obtained in boring operations, ranging from 30 to 120 feet at North Ormesby and South Bank, as well as north of the Tees estuary, by the reporter.

Mr. Harry Muller, of West Chiselhurst Park, Eltham, Kent, has contributed an interesting report of a large Igneous boulder observed near to New Barns, Arnside, but it lies outside of the area under the supervision of this committee, and the particulars have been transferred to the North-West of England Boulder Committee for verification.

NOTES ORNITHOLOGY.

Waxwings near Louth.—A flock of five waxwings (*Ampelis garrulus*), which were feeding in a hawthorn hedge, in a field near Louth, was shot to-day (March 3rd), by a man who was lark-shooting. He shot two early in the morning, and going again two or three hours later, secured the other three in about the same place, two of which are now in my possession.—R. LARDER, 33, Mercer Row, Louth, March 3rd, 1893.

Occurrence of the Bohemian Waxwing near Hull.—In the last week in February four Bohemian Waxwings (*Ampelis garrulus*) were shot on Hessle Common, near Hull, and are now in the hands of Mr. W. Ward, of Cambridge Street, for preservation. The presence of this interesting bird, so conspicuous by the unique wax tips to its wings, is due, no doubt, to the exceptional severity of the weather on the Continent.—H. M. FOSTER, Hull, 11th March, 1893.

NOTE—COLEOPTERA

Cychrus rostratus near Ulverston.—In March, 1892, whilst lifting some straw which had been laid on a flower-bed, I disturbed an individual of this species, apparently a male. After examining, it was allowed to go. A few days afterwards, one—probably the same—appeared in one of the greenhouses; then it went into 'the bottle,' but unfortunately it was left there too long. No other specimen has come under my notice, although stones have been turned, and all likely places searched. Probably it is as uncertain here as in other localities.—LISTER PETTY, Ulverston, March 7th, 1893.

April 1893.

**LITHOCOLLETIS CERASICOLELLA,
A SPECIES NEW TO THE BRITISH FAUNA,
AT DONCASTER.**

H. H. CORBETT, M.R.C.S.

Doncaster.

I HAVE pleasure in adding the above species to the British list. Last autumn I collected the mines of the larva in the leaves of *Prunus avium*, and I have now bred a few of the imagines. One of the latter I have sent to Mr. Barrett, who confirms my opinion that it is undoubtedly *Lithocolletis cerasicolella* Herr.-Schäff. Appended is a description of the mine, the larva, and the imago.

The mine is elongate, and is placed between the lateral veins of the leaf of *P. avium*, reaching from near the mid-rib towards the margin.

The larva is pale yellow, second segment orange yellow. Head, dark brown or black. Legs, grey.

The imago belongs to the *pomifoliella* group, and is very like *L. spinicolella*, but the following points serve to distinguish it from that species :

The first dorsal streak is more gradually curved, and its apex does not point in a line continuous with the basal line. The third dorsal streak is very small, and never joined to the third costal streak. The third and fourth costal streaks are united by some white scales above the sub-apical black spot.

NOTE—BOTANY.

Paris quadrifolia in North Notts.—We found this handsome plant abundant in several of the woods and plantations in this neighbourhood in May last (1892), especially in places where the underwood had been cut and cleared away. LEONARD BUTTRESS, Grove Rectory, Retford, March 20th, 1893.

NOTES—MAMMALIA.

Badger on Towton Battle-field.—A fine female Badger (*Meles taxus*) was caught in a trap in Renshaw Wood, Towton, near Tadcaster, on Wednesday, March 15th. From her appearance it is evident that family matters will shortly occupy her attention. I may state the trap was not set for her, nor was she much hurt, being caught by the toes.—RILEY FORTUNE, Harrogate, 20th March, 1893.

Early Appearance of the Noctule.—On the 9th March, my friend the Rev. R. A. Summerfield, B.A., Vicar of North Stainley, near Ripon, sent me a Noctule (*Vesperugo noctula*), which one of his sons had shot on the wing in broad daylight, on the Sth, at that place.—WM. DENISON ROEBUCK, Leeds, March 20th, 1893.

AMERICAN WHITE-THROATED SPARROW IN HOLDERNESS:

AN ADDITION TO THE YORKSHIRE AVI-FAUNA.

JOHN CORDEAUX, M.B.O.U.,

Eaton Hall, Retford.

At the commencement of this year, Mr. G. W. Jalland, of Holderness House, near Hull, a practical and observant naturalist, saw amongst the birds he was in the habit of feeding on his lawn, one with which he was not acquainted, and which he suspected might be a wanderer from some distant part of the world. The bird remained about the grounds for six weeks, and its identity not having been determined, was shot on February 13th, and sent in the flesh to Mr. P. Loten, of Easington. I am indebted to Mr. Hewetson, of Leeds, for a very full description and excellent and correct water-colour of the bird, and from these I was able to identify it as a fine example of this American Bunting (*Zonotrichia albicollis* Bonap.), and presumably a mature male in winter plumage. Subsequently, on February 25th, I had the opportunity of examining the bird at Mr. Loten's house, at Easington, and verifying my previous supposition. The drawing was also sent by Mr. Hewetson to Professor Newton, who says in reply that he thinks there can be no doubt about the accurate determination as *Zonotrichia albicollis*.

There are two almost black stripes on the crown separated by a median one of pale buff or dirty white. A broad superciliary stripe from the base of the mandible to the occiput, bright yellow as far as the middle of the eye, and then pale buff. A broad dark patch on side of head enclosed between dark lines, one of these running through the region of the eye, the other forming the rictal streak. Throat a smoky, silky-white, and sharply defined against the bluish-grey of sides of head and breast. This is margined with a narrow black maxillary line. Edge of wing bright yellow, axillaries also yellow. The whole of the breast and flanks are marked with indistinct and very fine horizontal streaks, visible only in some lights. Back and scapularies rufous brown, streaked with darker; wings extend little beyond root of tail: tail rather long, slightly rounded, dark olive brown; two narrow white bands across wing coverts; legs and edges of mandibles flesh colour. Length 7 inches.

The White-throated Bunting has occurred twice before in Great Britain, once on the Aberdeenshire coast in 1867, and also more recently near Brighton.

Zonotrichia leucophrys, the White-crowned Bunting, a closely allied species, is known to visit South Greenland sparingly in the spring, where it probably breeds.

February 28th, 1893.

NOTES AND NEWS.

In the December 'Journal of Botany' is a notice of Mr. W. H. Pearson's reprint of *Lejeuneæ Madagascarienses*, originally published in the *Christiania Videnskabs Selskabs Forhandlingar*, 1892.

The same writer publishes a description and figure of a new British Hepatic in the 'Journal of Botany' for September 1892, *Marsupella (Cesia) conferta* (Limp.) Spruce, which was found on Ben Nevis by Mr. W. West in 1880.

Recent elections to the Fellowship of the Linnean Society have included the name of Mr. William Whitwell, of Balham, who during his residence in Yorkshire has done good work for the botany of that county.

Among recent elections to the Fellowship of the Entomological Society of London we note the names of Mr. Geo. C. Dennis, of York, and Mr. William Mansbridge, of Horsforth near Leeds.

Among those recently elected to the privileges of F.G.S. are Mr. W. Gregson, of Baldersby, near Thirsk, and Mr. J. W. Stather, Secretary of the Hull Geological Society.

In 'Nature' for Jan. 5th, 1893, Prof. W. A. Herdman propounds the outline of a scheme for what will be a very useful series of handbooks (on the principle of the British Floras—brief, terse, diagnostic), of the British Marine Fauna. Would that this was carried out in such branches as Entomology as well.

The following extract from 'Wild Spain,' by Abel Chapman and Walter J. Buck (p. 249), bears on an article which Mr. John P. Thomasson contributed to the 'Naturalist' of Dec. 1890: 'One circumstance deserves passing remark—the relatively small number of eggs laid in the south than is the case with many of the same species further north. In Spain, several of the warblers lay only four eggs; the Blackbird, as a rule, but three, and these much brighter coloured than at home.'

The new part of the Proceedings of the Yorkshire Geological and Polytechnic Society contains some brief notes by Mr. G. W. Lamplugh, F.G.S., on 'The Flamborough Drainage Sections.' We fear that this will be the last, for the present, of the author's valuable contributions to the Glacial geology of East Yorkshire. Mr. Lamplugh is now on the staff of the Geological Survey, and is stationed in the south of the Isle of Man.

We have pleasure in calling attention to the List of 'Plants of the District,' by our valued contributor, Mr. Lister Petty, of Ulverston, which occupies pages 63-66 of Atkinson's 'Guide to Grange and Arnside.' The plants are enumerated under their respective natural orders, the commoner species being omitted. Other matter of interest to naturalists in the Guide book is a chapter for anglers. The Guide itself is well illustrated, has a good map, and is calculated to be of value to visitors. There is one point to which we would call the publisher's attention, and that is the absence of any date of publication. We trust that new editions, as they are successively called for, will be dated, and so add value to the book and its contents.

BIBLIOGRAPHY:

Papers and Records published with respect to the Natural History and Physical Features of the North of England.

BIRDS, 1890.

THE present instalment has been compiled and arranged by
WM. DENISON ROEBUCK, F.L.S.

The previous instalments of the Bibliography of Birds have appeared as follows:—

For 1884—	in ‘Naturalist,’	March and April	1885,	pp. 185-200,
				continued in May 1885, ,, 223-227.
,, 1885—	,,	September	1886,	,, 260-272.
,, 1886—	,,	May and June	1889,	,, 145-175.
,, 1887—	,,	August and Sept.	1889,	,, 249-270.
,, 1888—	,,	June and July	1890,	,, 177-198.
,, 1889—	,,	{ April and May	1892,	,, 121-136.
		{ Sept. and Oct.	1892,	,, 281-291.

The counties and vice-counties of which cognizance is taken are the following, as named and numbered in the Watsonian scheme:—

53, Lincoln S.; 54, Lincoln N.; 56, Notts.; 57, Derby; 58, Cheshire; 59, Lancashire S.; 60, Lancashire W.; 61, York S.E.; 62, York N.E.; 63, York S.W.; 64, York Mid W.; 65, York N.W.; 66, Durham; 67, Northumberland S.; 68, Cheviotland; 69, Westmorland with Furness; 70, Cumberland; and 71, Isle of Man.

The remarks prefixed to the Bird-bibliography for 1886 (published in the ‘Naturalist’ for May 1889, p. 145) are equally applicable to the present instalment.

ANON. [not signed].

Northumb. S., Cheviotland, Durham.

List of . . . Donations to the Museum [at Newcastle] . . . from August 10th, 1888, to July 1st, 1889 [*Tringoides hypoleucos* shot on the Leazes (H. A. Innes); *Corvus cornix*, Nunnykirk (Mrs. Noble); *Larus ridibundus*, bird of the year, Hebburn reservoir (Jas. S. Forster); *Syrnhaptus paradoxus* killed at Craggside (Jno. Hancock); pied *Turdus merula* shot at the Felling, Nov. 1888 (Rev. E. Haythornthwaite); *Tringa alpina* shot at Holy Island (J. D. Walker); *Colymbus septentrionalis* shot there (H. C. Swan); *Stercorarius pomatorhinus* shot about 1867 at Prestwick Car (W. E. Beck); five *Coccothraustes vulgaris* shot at Beaufront (A. Robson); *Certhia* shot at Woodburn (Edward Newton); two *Loxia curvirostra* shot at Winlaton (Thos. Thompson)]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. 10, part 2 (1890), pp. 312-313.

ANON. [signed ‘T. D. (Friends’ Retreat, Heslington-road, York)’. York N.E.

Thrush [*Turdus musicus*]’s Eggs in February [28th, near York].
Field, March 8th, 1890, p. 360.

ANON. [signed ‘Secretary’].

Lanc. S.

Penketh Field Club [*Sturnus vulgaris* descending a bedroom chimney].

N. H. J., March 15th, 1890, p. 29.

April 1893.

- ANON. [signed 'G. H. B. (Hyde, near Manchester)']. **Cheshire.**
Destruction of Plover [*Vanellus vulgaris*] s' Eggs [about Hyde they are decreasing]. Field, April 19th, 1890, p. 587.
- ANON. [signed 'T. D. (York)']. **'York.'**
Blackbird [*Turdus merula*] occupying deserted nest of Thrush [(*T. musicus*) near York]. Field, May 3rd, 1890, p. 646.
- ANON. [signed 'W. H. B.']. **Lanc. S.**
Sheldrake [*Tadorna cornuta*] and **Great Spotted Woodpecker** [*Dendrocopus major*] near Liverpool [on banks of Alt, and at Blundellsands, Oct. 1889; details given]. Field, June 7th, 1890, p. 852.
- ANON. [signed 'E.C. (Lilburn Tower, Northumberland)']. **Cheviotland.**
Pheasant [*Phasianus colchicus*] nesting in a **Silver Fir** [at Lilburn Tower; in an old nest of *Columba palumbus*]. Field, June 14th, 1890, p. 892.
- ANON. [not signed]. **York Mid W.**
Ellesmere School, Harrogate [at Pateley Bridge; young *Turdus torquatus* noted]. N.H.J., June 15th, 1890, p. 90.
- ANON. [not signed]. **Derbyshire.**
Penketh [excursion to Monsall Dale, 23rd May; egg of *Cinclus* obtained]. N.H.J., June 15th, 1890, p. 92.
- ANON. [not signed]. **York S.W. and N.E.**
Extracts from an Ornithological Diary [for 30th March and 3rd April, 1889; *Gallinago caelestis* and *Linota rufescens* at Rawcliffe; *L. linaria* round York; and *Parus palustris* in Stockton Woods]. N.H.J., June 15th, 1890, p. 96.
- ANON. [signed 'J. C.']. **Westmorland.**
A Swallow [species not stated] caught on a **Fish-hook** [near Miller Bridge, Ambleside]. Field, June 23rd, 1890, p. 979.
- ANON. (signed 'C.F.T.Y., C.E.'). **? Notts.**
Sparrowhawk [*Accipiter nisus*] caught by a **Locomotive** [of Midland express on its way to London from Nottingham, June 14th, 1890; within a few days a *Perdix cinerea* caught by an engine on the same line; localities not given]. Field, June 28th, 1890, p. 979.
- ANON. [signed 'Constant Reader']. **York N.E.**
Woodcock [*Scolopax rusticola*] caught in a **Vermin Trap** [at Kilburn, Hambleton Hills, near Thirsk, 21st July; young bird, evidently reared there]. Field, July 26th, 1890, p. 160.
- ANON. [signed 'H. C.']. **Derbyshire.**
Thrush [*Turdus musicus*] roofing its nest [at Pinxton, Derbyshire]. Field, Aug. 30, 1890, p. 346.
- ANON. [not signed]. **Lanc. S.**
Penketh Boys' Field Club [notes on *Parus ceruleus*, *Locustella*, *Phylloscopus sibilatrix* (in Brock Valley near Preston), and *Acrocephalus phragmitis* (nest at Sankey)]. N. H. J., Sep. 15th, 1890, p. 110.
- ANON. [editorial]. **Cumberland, Derbyshire, Lanc. S. and W., Notts, York Mid W. and N.E.**
Migrant Table, No. 14, 1890 [giving dates of arrival of 28 species of birds at Bolton (Cumberland), Baslow near Chesterfield, Manchester, Mansfield, Penketh, Preston, Rawdon, York, and Wigton; averages also shown; special remarks on *Crex*, *Cuculus*, and *Hirundo*]. N. H. J., Sep. 15th, 1890, p. 117.
- ANON. [not signed]. **Isle of Man.**
[Birds observed on an] Excursion to the Mull Hills [Isle of Man, 24th May, 1887; *Lomvia troile* in numbers]. Back Trans. J. of Man N.H.S., i. 117; publ. with Yn Lioar Manninagh, No. 7, Oct. 1890.

- ANON. [not signed]. Isle of Man.
Notices of Books . . . The Surnames and Place Names of the Isle of Man. By A. W. Moore [with passing references to nidification of *Falco peregrinus* and *Corvus corax* near St. Maughold's Chair; and to 'garee vreck' as the Manx name for *Hematopus ostralegus*]. Yn Lioar Manninagh, No. 7, Oct. 1890, i. 200-201.
- ANON. [signed 'F. R.']. Isle of Man.
Fight between Magpie [*Pica rustica*] and Rat [in a cornfield near Ramsey, Isle of Man, described]. Yn Lioar Manninagh, No. 7, Oct. 1890, p. 204.
- ANON. [signed 'Beverley']. York S.E.
Arrival of Wild Geese [*Anser brachyrhynchus*] on the Wolds, Sep. 25th, 1890; and flock of 38 seen 27th. Field, Oct. 4th, 1890, p. 501.
- ANON. [signed 'Beacons']. Northumberland and Durham.
A Day's Bird-Nesting in Northumbria [place not stated; *Corvus corax*, *Loxia curvirostra*, *Numenius arquata*, *Phasianus*, *Acredula rosea*, *Cinclus*, *Motacilla melanope*, *Phylloscopus sibilatrix*, *Sylvia atricapilla*, *Turdus merula*, *Fringilla caelebs*, *Syrnium aluco*, *Columba oenas*, *Muscicapa atricapilla*, *Gallinula chloropus*, *Gallinago caelestis*, *Emberiza schaniclus*, *Pica caudata*, *Scolopax*, *Dendrocopus major*, *Phylloscopus trochilus*, *P. rufus*, *Locustella*, *Acrocephalus phragmitis*, *Cotile*, *Sylvia hortensis*, *Muscicapa grisola*, *Garrulus*, *Sylvia cinerea*, *Turdus musicus*, *Asio otus*, and *Caprimulgus* referred to]. Field, Oct. 11th, 1890, p. 538.
- ANON. [signed 'F. W. H.']. Linc. N.
Buzzard [*Buteo vulgaris*] in Lincolnshire [one shot near Kirton-in-Lindsey 'the other day'; 20 in. long, 3 feet across wings; in the second note, writer justifies himself for killing the bird]. Field, Oct. 11th, 1890, p. 538, and Oct. 18th, p. 599; followed by severe criticism by M. G. Watkins, Field, Oct. 25th, 1890, p. 616.
- ANON. [not signed]. York S.W.
Migrant Returns [from Ackworth; giving dates for *Cuculus*, *Crex*, *Chelidon*, and *Hirundo*]. N.H.J., Oct. 15th, 1890, p. 136.
- ANON. [signed 'Ed.']. Durham.
Nocturnal Migration of Birds [with footnote as to *Hirundo rustica* seen at Blaydon-on-Tyne, Nov. 10th, 1890]. Field, Nov. 15th, 1890, p. 746.
- ANON. [not signed]. Northumberland S., Cheviotland, and Durham.
Memoir of the late John Hancock, of Newcastle-on-Tyne [with references to *Totanus glareola*, *Ampelis garrulus*, *Fuligula cristata*, *Caprimulgus ruficollis*, *Aquila nevia*, and *Syrnhaptis*]. Zool., Dec. 1890, pp. 441-447.
- ANON. [not signed]. York N.E.
[*Alcedo* and *Cinclus*, frequenting Ayton School Grounds, becoming very tame owing to the inclemency of weather (Nov. 24th, 1890)]. N. H. J., Dec. 15th, 1890, p. 165.
- HENRY F. ALLISON. Linc. N.
Great Grey Shrike [*Lanius excubitor*] and Peregrine Falcon [*Falco peregrinus*] in Lincolnshire [at Grainthorpe Fen and Tothill Wood, near Louth, respectively]. Zool., March 1890, p. 106.
- HENRY F. ALLISON. Linc. N.
Shore Lark [*Otocorys alpestris*] in Lincolnshire [at North Somercotes, Feb. 11th, 1890]. Zool., June 1890, p. 224.
- HENRY F. ALLISON. Linc. S.
Kingfisher [*Alcedo ispida*] flying into a House [in a village near Beckingham, Newark, Sep. 7th, 1890]. Zool., Nov. 1890, p. 438.
- HENRY F. ALLISON. Linc. S.
Hawfinch [*Coccothraustes vulgaris*] in Lincolnshire [at Beckingham near Newark; shot down by gardeners]. Zool., Dec. 1890, p. 465.

- OLIVER V. APLIN. Notts.
The Grey and the White Wagtails [*Motacilla melanotos* and *M. alba*] in Oxfordshire [with a passing reference to the coloration of a Rainworth killed example]. Zool., Oct. 1890, p. 374.
- Notts, Northumberland S., Durham, Cumberland, Furness,
 O. V. APLIN. Lanc. W., York S.E., S.W., and N.E., Linc. N.
On the Distribution and Period of Sojourn in the British Islands of the Spotted Crake [(*Porzana maruetta*); being a series of collected records for the various counties, and some generalised conclusions]. Zool., Nov. 1890, pp. 401-417.
- H. T. ARCHER. Cheviotland.
Late Breeding of Starling [*Sturnus vulgaris*] in Northumberland [near Alnwick, November 1889]. Nat., Jan. 1890, p. 15.
- JAMES BACKHOUSE, Jun. York N.E.
Eastern Turtle Dove [*Turtur orientalis*] in Yorkshire [one, in first plumage, near Scarborough, Oct. 23rd, 1889]. Nat., Sep. 1890, p. 258.
- J. BACKHOUSE, Jun. York N.W.
Yellow Wagtail [*Motacilla rain*] in Swaledale [exceedingly common about Muker; an addition to Goodchild's list]. Nat., Oct. 1890, p. 318.
- JAMES BACKHOUSE [Jun.]. York Mid W.
Yorkshire Notes on the Tree Sparrow [(*Passer montanus*); notes on habits, nidification, etc., at Wilstrop near York]. Nat., Dec. 1890, p. 355.
- J. C. BACON. Isle of Man.
Fieldfare [*Turdus pilaris*] killed by a Peregrine [(*Falco peregrinus*) on the cliffs of the Isle of Man]. Field, May 24th, 1890, p. 772.
- MATTHEW BAILEY. York S.E.
Flamborough Bird-Notes [anent Migratory Movements of *Alauda arvensis*, *Corvus monedula*, *Scolopax rusticola*, *Turdus torquatus*, *Regulus cristatus*, *Ruticilla phoenicurus*, *Lanius excubitor*, and one *Otocorys*]. Nat., Jan. 1890, p. 14. [Anent occurrence of *Iynx*, *Nema sabinii*, *Uria grylle*, *Larus minutus*, and *Hydrochelidon nigra*]. Nat., Oct. 1890, p. 318. [Great rush of *Scolopax rusticola*, Oct. 20th-21st, 1890]. Nat., Nov. 1890, p. 335. [Anent occurrence of two *Nema sabinii*, and movements of *Rissa tridactyla*]. Nat., Dec. 1890, p. 354.
- MATTHEW BAILEY. York S.E.
Shore-larks [*Otocorys alpestris*] at Flamborough [a dozen shot and several more seen, 21st Dec. 1889]. Nat., Feb. 1890, p. 46.
- MATTHEW BAILEY. York S.E.
Flamborough Notes: Arrival and Departure of Birds [dates given for *Pratincola rubicola*, *Motacilla lugubris*, *Saxicola ananthe*, *Regulus cristatus*, *Corvus cornix*]. Nat., May 1890, p. 149.
- GEO. BARCHARD. York S.E.
Stork [*Ciconia alba*] in Holderness [one shot at Mappleton near Hornsea, 2nd Aug. 1890; dimensions and details given; note also that *Phalacrocorax carbo* shot a few years ago at Mappleton is now in writer's collection]. Field, Aug. 9th, 1890, p. 214.
- H. G. BARCLAY. Cheviotland.
Protection of Birds on the Farne Islands [with notes as to *Fratercula*, *Lomvia*, *Larus argentatus*, *Sterna macrura*, *S. dougalli*, *S. cantiaca*, *Somateria mollissima*, *Phalacrocorax carbo*, *Ægialitis hiaticula*, *Tadorna cornuta*, *Larus fuscus*, and *Rissa*]. Zool., Jan. 1890, p. 26.
- S. BARKLEY. York S.E.
Sabine's Gull [*Nema sabinii*] at Flamborough [two shot off the Head, Sep. 9th]. Field, Sep. 13th, 1890, p. 404.

- C. R. BEAUMONT. Lanc. S.
A Ramble Round Daisy Nook [near Oldham; *Alauda arvensis*, *Turdus musicus*, *Erithacus*, and *T. merula*, noted]. Trans. Rochdale Lit. and Sci. Soc., vol. 2, for 1889-90, publ. 1890, p. 70.
- H. BENSON. York S.E.
Two-barred Crossbill [*Loxia bifasciata*] in Surrey [and near Easington, Holderness, 12th Aug., 1889]. Zool., Jan. 1890, p. 18.
- GEORGE BOLAM. Cheviotland, Northumberland S., Durham.
Some Notes on the Occurrence of Pallas's Sand Grouse, *Syrrhaptes paradoxus*, (Pallas) in the District, during the recent visitation of the species to this country [giving particulars and details of Northumberland, Durham, and Scottish occurrences]. Proc. Berw. Nat. Club for 1889, vol. 12, No. 3 (publ. 1890), pp. 542-551.
- HARRY B. BOOTH. York Mid W.
Bird-Notes from the Malham District [treating in chatty way of *Motacilla raii*, *M. melanope*, *Cinclus*, *Alcedo*, *Tringoides*, *Ardea cinerea*, *Muscicapa atricapilla*, *Fulica*, *Acrocephalus phragmitis*, *Corvus monedula*, *Columba anas*, *Saxicola ananthe*, *Columba palumbus*, *Tinnunculus*, *Turdus torquatus*, *Numenius arquata*, *Vanellus*, *Totanus calidris*, *Gallinago caelestis*, *Tringa alpina*, *Charadrius pluvialis*, *Lagopus scoticus*, *Perdix cinerea*, *Gallinula chloropus*, *Anas boschas*, *Fuligula cristata*, *Phylloscopus sibilatrix*, *Syrnium aluco*, *Caprimulgus*, *Strix flammea*, *Corvus corone*, and *Turdus pilaris*]. Nat., Sep. 1890, pp. 259-261.
- HARRY B. BOOTH. York Mid W.
Albino Greenfinch [*Ligurinus chloris*] near Bradford [among a flock near Baildon Moor, April 11th, 1890]. Nat., Nov. 1890, p. 335.
- J. WALLACE BOWERS. 'York.'
Destruction of Plovers [*Vanellus vulgaris*] Eggs [about York; the bird is *not* becoming extinct]. Field, April 19th, 1890, p. 587.
- F. BOYES. York S.E. and N.E.
Great Plover or Thick-knee [*Edicnemus scolopax*] near York [still breeds in a few East Riding and one North Riding locality]. Field, Jan. 12th, 1890, p. 51.
- F. BOYES. York S.E.
Tits [*Parus major*] killing Bees [near Beverley]. Field, Jan. 11th, 1890, p. 56.
- F. BOYES. York S.E.
The Migration of Woodcocks [(*Scolopax rusticola*); note in criticism of some by John Cordeaux, and recapitulating some of the writer's Holderness experience; reference made also to migration of *Turdus iliacus*, *T. pilaris*, *T. merula*, *T. musicus*, *Corvus cornix*]. Field, Nov. 22nd, 1890, p. 779.
- F. BOYES. York S.E.
Swifts [*Cypselus apus*] rising from the Ground [giving observations made in the East Riding, also upon their sleeping in the daytime]. Field, Dec. 6th, 1890, p. 850.
- F. BOYES. York S.E.
Abundance of Snipe [(*Gallinago caelestis*) near Beverley, during the present winter; *Anas boschas* also mentioned]. Field, Dec. 20th, 1890, p. 892.
- F. BOYES. York S.E.
Little Grebe [*Tachybaptus fluviatilis*] occurring in East Yorkshire during the autumnal migration; note of one at Walkington, situated on the Wolds, some three miles above Beverley]. Field, Dec. 20th, 1890, p. 910.
- F. BOYES. York S.E.
Pheasants [*Phasianus colchicus*] swimming [an instance near Beverley cited]. Field, Dec. 20th, 1890, p. 911.

- F. BOYES. York S.E. or S.W.
Bittern [*Botaurus stellaris*] in Yorkshire [one shot by a bargeman 'somewhere between' Wakefield and Beverley; and one exposed for sale in Hull market]. Field, Dec. 27th, 1890, p. 948.
- THOMAS BUNKER. York S.W.
Turtle-Dove [*Turtur communis*] and **Nightingale** [*Daulius luscinia*] near Goole [at Rawcliffe, the first, male, shot 8th May]. Nat., June 1889, p. 182.
- THOMAS BUNKER. York S.E.
Storm Petrel [*Procellaria pelagica*] at Howden, Yorks. [20th Oct. 1890, killed by telegraph-wires; two previous Goole occurrences known]. Nat., Nov. 1890, p. 352.
- E. BURTON. Durham.
Rook [*Corvus frugilegus*]'s Nest with Eggs in November [near Durham]. Field, Nov. 8th, 1890, p. 698.
- BASIL CARTER. York N.W.
Starling [*Sturnus vulgaris*] Nesting in February [on the 4th near Catterick]. Field, Feb. 15th, 1890, p. 248.
- BASIL CARTER [misprinted 'Cauten']. York N.W.
Great Grey Shrike [*Lanius excubitor*] in North Yorkshire [quoting two instances at Masham]. Field, March 8th, 1890, p. 360.
- BASIL CARTER. York N.W.
Scarcity of Goldfinches [*Carduelis elegans*] near Masham; common a few years ago, but now merely a straggler; decrease attributed to bird-catchers]. Field, Aug. 30th, 1890, p. 346.
- JAMES CARTER. York N.W.
Goosander [*Mergus merganser*] near Masham [on '10th inst.,' male observed but not captured]. Field, March 8th, 1890, p. 360.
- JAMES CARTER. York N.W.
Notes from North Yorkshire [arrival of *Totanus calidris*, *Saxicola ananthe*, *Phylloscopus rufus* at Masham; *Perdix cinerea* run over by train at Masham Station]. Field, April 12th, 1890, p. 518.
- ALFRED C. CHAPMAN. Northumberland S.
Long-tailed Duck [*Harelda glacialis*] inland in Northumberland [near Haydon Bridge, where also have occurred *Fuligula cristata*, *Clangula*, *Anas boschas*, *Querquedula crecca*, *Turdus iliacus*, and *T. merula*; dates and other details given for some of these]. Nat., Jan. 1890, p. 2.
- ALFRED C. CHAPMAN. ? Durham, Northumberland, and Cheviotland.
Natural History Notes from the North [of England, not localised, but written from Moor House, Leamside, co. Durham, deal with habits, migration, etc., of *Phylloscopus trochilus*, *Sylvia cinerea*, *Hirundo*, *Chelidon*, *Asio otus*, *Caprimulgus*, *Linota flavirostris*, *Emberiza miliaria*, *Ardea cinerea*, *Cypselus*, *Motacilla melanope*, *M. lugubris*, *M. raii*, *Phylloscopus rufus*, *Gallinago caelestis*, *Phenicura ruticilla*, *Pyrrhula*, *Regulus cristatus*, *Turdus viscivorus*, both *Numenii*, *Charadrius pluvialis*, *Totanus calidris*, *Tringoides*, *Tringa alpina*, *Falco peregrinus*, and *Lagopus scoticus*]. Field, Aug. 2nd, 1890, p. 201.
- FRED CHAPMAN. York N.W.
Breeding of Heron [*Ardea cinerea*] in Wensleydale, N.W. Yorks. [a pair nesting in a rookery between Carperby and Thornton Rust]. Nat., July 1890, p. 210.
- J. CHAPMAN. York N.E.
Alpine Swift [*Cypselus melba*] at Scarborough [one picked up dead, having been seen to approach from the seaward and drop to the ground; identified by Mr. Morley, taxidermist, King Street, Scarborough]. Field, Oct. 18th, 1890, p. 599.

- Chesh., Cumb., Derbyshire, Durham, Lanc. S. and W.,
Linc. N. and S., Cheviotland and Northumb. S., Notts, Westmd.,
MILLER CHRISTY. York S.E., N.E., S.W., Mid W., N.W.
- A Catalogue of Local Lists of British Birds** [giving titles of numerous works for the various counties; Isle of Man omitted]. Zool., July 1890, pp. 247-267.
- J. E. CLARK. York N.E.
York, Bootham. Natural History Club [Wild Geese near York reported]. N. H. J., Feb. 15th, 1890, p. 10.
- J. E. CLARK. 'York.'
York [notes, re *Erithacus*, *Turdus merula*, *T. musicus*, and *Alauda arvensis*]. N. H. J., Feb. 15th, 1890, p. 15.
- H. V. COATES. Lanc. S.
Penketh Field Club [list of birds reaches 44, including *Charadrius pluvialis*, *Parus ater*, *P. palustris*, and *Corvus corone*]. N. H. J., April 15th, 1890, p. 51.
- F. COBURN. Lincs.
Hybrid between the Grey and Red-legged Partridges [*Perdix cinerea* and *Caccabis rufa*], seen at Birmingham in a hamper of game from Lincolnshire; described, editorial note appended, and repeated at p. 446, that it was an immature Red-leg (*Caccabis rufa*). Zool., Oct. 1890, xiv. 384. and Dec. 1890, xiv. 466.
- J. COLLINS. Lanc. S.
Curious Visitors at Sugar [near Warrington; *Caprimulgus europaeus* nightly one year]. Young Nat., June 1890, p. 118.
- EDWARD COMBER. Cheshire.
Hawfinch [*Coccothraustes vulgaris*] breeding in Wirral [at Ashfield, near Neston, this summer]. Zool., Oct. 1890, p. 390.
- EDWARD COMBER. Cheshire.
Spotted Crake [*Crex porzana*] in Wirral [one picked up under telegraph wires close to Neston, 26th Aug. 1890]. Zool., Oct. 1890, p. 390.
- JOHN CORDEAUX. Linc. N., York S.E.
Ornithological Notes from the Humber District in the Autumn of 1889 [anent *Loxia bifasciata*, *Streptilas*, *Hematopus*, *Numenius phaeopus*, *N. arquata*, *Querquedula crecca*, *Totanus canescens*, *Linota rufescens*, *Hydrochelidon nigra*, *Syrnhaptes*, *Tringa canutus*, *Sterna cantiaca*, *Stercorarius crepidatus*, *Calidris*, *Procellaria pelagica*, *Ruticilla*, *Saxicola œnanthe*, *Muscicapa atricapilla*, *Motacilla raii*, *Anthus pratensis*, *Emberiza schœniclus*, *Turdus musicus*, *Lynx*, *Parus major*, *P. cœruleus*, *P. ater*, *Gallinago gallinula*, *Dendrocopus major*, *Garrulus*, *Porzana maruetta*, *Phalaropus fulicarius*, *Totanus fuscus*, *Machetes*, *Vanellus*, *Chrysonitris*, *Emberiza hortulana*, *Columba palumbus*, *Turdus pilaris*, *Corvus corax*, *C. corone*, *C. cornix*, *C. frugilegus*, *C. monedula*, *Plectrophanes nivalis*, *Regulus cristatus*, *Cinclus melanogaster*, *Scolopax rusticola*, *Turdus torquatus*, *Sturnus*, *Linota linaria*, *Fringilla montifringilla*, *Otocorys*, *Lanius excubitor*, *Tringa minuta*, *Rallus*, *Haliaetus albicilla*, *Tringa striata*, *Archibuteo*, *Charadrius pluvialis*, *Certhia*, *Regulus ignicapillus*, *Ruticilla titys*, *Hirundo*, *Chelidon*, *Stercorarius pomatorhinus*, *Puffinus major*, and *Larus leucopterus*; notes on occurrence, migration, habits, etc.]. Nat., Jan. 1890, pp. 5-11.
- JOHN CORDEAUX. Linc. N.
The Two-barred Crossbill [*Loxia bifasciata*] in Lincolnshire, etc. [Heligoland notes given; the Lincolnshire locality was South Cockerington near Louth, autumn of 1889]. Nat., Jan. 1890, p. 2.
- JOHN CORDEAUX. York S.E.
Probable Occurrence of *Phylloscopus superciliosus* (Gm.) near Spurn [seen by H. B. Hewetson in October 1889, in his garden at Easington]. Nat., Feb. 1890, p. 38.
- April 1893.

- JOHN CORDEAUX. **York S.E. and S.W., Linc. N. and S.**
The Ruff and Reeve [*Machetes pugnax*] in Lincolnshire [treating in considerable and most interesting detail of the history of this as a Lincolnshire bird, with notices also for East Yorkshire, and also of *Eudromias*, *Anas boschas*, *Mareca*, *Fulgula ferina*, *Tringa canutus*, *Squatarola*, *Limosa*, *Totanus calidris*, *Numenius arquata*, *Charadrius fluviialis*, *Gallinago caelestis*, and *Tot. glareola*]. *Field*, April 26th, 1890, p. 593; rep. *Zool.*, June 1890, xiv., 204-209.
- JOHN CORDEAUX. **Linc. N., Cheviotland.**
Wheatear [*Saxicola oenanthe*] in North Lincolnshire in March [giving several March and even February dates for North Lincolnshire, Farne Islands, etc.]. *Zool.*, May 1890, p. 185.
- JOHN CORDEAUX. **Linc. N., York S.E.**
Have we two sorts of Woodcock [(*Scolopax rusticola*) discussed]. *Zool.*, June 1890, p. 220.
- JOHN CORDEAUX. **Linc. N., York S.E.**
Ornithological Notes from the Humber District, May 1890 [anent nesting of *Falco aesalon*, *Corvus corone*, movements of *Squatarola*, *Tringa alpina*, *Streptilas*, *Numenius phaeopus*, *Calidris*, *Hematopus*, *Totanus calidris*, *Eudromias* (local name at Spurn, 'Land-Dotterel'), and *Tringoides*, nesting of *Aegialitis hiaticula*, arrival of *Muscicapa atricapilla*, *Ruticilla phoenicurus*, *Sylvia atricapilla*, *S. hortensis*, *Phylloscopus trochilus*, occurrence of *Lanius collurio*, *Corvus corone*, *Anthus obscurus*, nesting of *Emberiza schaniclus*, arrival of *Hirundo*, *Chelidon*, *Cotile*, *Cypselus*, nesting of *Sterna minuta*, occurrence of *Turtur communis* and *Syrnhaptus*, nesting of *Linota cannabina*, (Bent-Linnet), and nesting of *Passer montanus*]. *Nat.*, July 1890, pp. 199-202.
- JOHN CORDEAUX. **York S.E.**
Woodcocks [(*Scolopax rusticola*); details of observations made on the Holderness coast, Oct. 19th, 20th, 21st; *Lomvia troile*, *Corvus cornix*, *Turdus merula* also noted]. *Field*, Nov. 15th, 1890, p. 746.
- JOHN CORDEAUX. **York S.E.**
The Migration of Woodcock [(*Scolopax rusticola*) in Holderness; note explanatory of remarks criticised by F. Boyes]. *Field*, Nov. 29th, 1890, p. 816.
- JOHN CORDEAUX. **York S.E., Linc. N.**
Pine Grosbeak in Heligoland—Shore Larks [*Otocorys alpestris*] in the Humber District [the latter occurring during December in tens of thousands on the Humber district sea coast]. *Field*, Dec. 27th, 1890, p. 948.
- R. COTTON. **Derbyshire.**
Purple Sandpiper [*Tringa maritima*] in Derbyshire [two seen (one shot) on the Burton Corporation Sewage Farm]. *Field*, Dec. 6th, 1890, p. 850.
- J. H. CROSLAND. **York Mid W., Lanc. W.**
[Nest of Stonechat (*Saxicola rubicola*) near Settle, 19th June: young *Numenius arquata* and egg of *Lagopus lagopus* also; at Sandside, Morecambe Bay, *Carduelis elegans*, *Strix flammea*, *Caprimulgus*, and *Cinclus*]. *N. H. J.*, Oct. 15th, 1890, p. 131.
- J. H. C[ROSLAND]. **York N.E.**
[Eight Numenius arquata at Langwith, near York, Aug. 29th, 1890]. *N. H. J.*, Oct. 15th, 1890, p. 132.
- J. HERBERT CROSLAND. **York N.E.**
Martins [*Chelidon urbica*] in October [at St. Mary's, York, on the 3rd, a nest]. *N. H. J.*, Oct. 13th, 1890, p. 136.
- J. H. CROSLAND. **York N.E.**
[Bird-Notes from near York, 1890; nest and young of *Ruticilla phoenicurus* and *Syrnium aluco*, 30th Aug.; *Ardea cinerea* and *Larus argentatus* seen over the city, 25th and 28th Sep.; *Chelidon* still at a nest in St. Mary's, 3rd Oct.]. *N. H. J.*, Nov. 15th, 1890, p. 151.

- R. W. C[ROSLAND]. Lanc. W.
 [**Locustella naevia** and **Certhia** at **Sandside**, Morecambe Bay]. N. H. J.,
 Oct. 15th, 1890, p. 131.
- R. W. CROSLAND. York N.E.
 [**Cotile** by the **Ouse**, Oct. 2nd, *Alcedo* on the Foss, Oct. 4th, both at York].
 N. H. J., Nov. 15th, 1890, p. 151.
- WILLIAM CROSS. Lanc. W.
Among the Fylde Flowers The Woodlands [near **Lytham**: mention
 of *Corvus frugilegus*, *Turdus viscivorus* and *Gallinula chloropus*]. Journ.
 of Microsc., July 1890, pp. 203 and 205.
- MATTHEW T. CULLEY. Cheviotland.
Natural History Notes [from **Coupland Castle**, anent *Chelidon*, *Gallinula*,
Chloropus, and *Motacilla yarrelli* nesting on the estate in 1887]. Proc. Berw.
 Nat. Club for 1888 (pub. 1889), vol. 12, p. 393.
- F. CURTIS. York N.E.
York, Bootham. Natural History Club [notes anent *Corvus cornix*, *Ardea*
cinerea, *Falco tinnunculus*, and *Turdus iliacus*, near York]. N. H. J.,
 Feb. 15th, 1890, p. 10.
- F. CURTIS. Lanc. W.
The Dead Lamb and its Mother [on the **Fells near Garstang**; notes on
Lagopus lagopus, *Charadrius pluvialis*, *Numenius arquata*, *Turdus torquatus*,
Tringoides, *Pratincola rubicola*, *P. rubetra*]. N. H. J., Sep. 15th, 1890, p. 118.
- FREDK. CURTIS. Lanc. W. and S.
Bird Notes for March [anent **Geese**, *Turdus viscivorus*, *T. musicus*,
T. merula, *Fringilla coelebs*, *Corvus monedula*, *Sturnus*, *Parus major*,
P. caeruleus, *P. ater*, *P. palustris*, *Larus ridibundus*, *Emberiza schaniicus*,
Anthus pratensis, *Motacilla lugubris*, *M. melanope*, *Linota rufescens*, *Anas*
boschas, *Cinclus*, *Lagopus*, *Mareca*, and *Saxicola oenanthe*]. N. H. J.,
 May 15th, 1890, p. 79.
- T[HOMAS]. D[ARLEY]. 'York.'
Golden Eagle [*Aquila chrysaetos*] **seen near York** [on Oct. 24th; Editor
 pertinently asks how writer would distinguish the flight from that of the Sea
 Eagle or even a Buzzard]. Field, Nov. 1st, 1890, p. 668.
- THOMAS DARLEY. 'York.'
The Golden Eagle [*Aquila chrysaetos*] **at York** [the writer's original
 specific determination defended, and the bird's appearance and flight
 described]. Field, Nov. 8th, 1890, p. 698.
- CHARLES DELMAR. Linc. N.
Eagle in Lincolnshire [one supposed to be *Aquila chrysaetos* shot in Squire
 Viner's wood at Southrey, near Bardney, 8th Nov.; measures 6 ft. 7 in.
 across the wings and weighs 11 lbs.; account of capture given]. Field,
 Nov. 15th, 1890, p. 746.
- CHARLES DIXON. Cheviotland, York S.E.
With the Birds on Cliffs and Rocks [with wood-cut of Robin Lythe's
 Hole at Flamborough, and notes on *Fratercula arctica* on the Farnes;
 a gossiping paper]. Leisure Hour, Oct. 1890, pp. 680-5.
- W. A. DURNFORD. York S.W.
Nesting Habits of Swallows [(*Hirundo rustica*) presumably at Elsecar,
 carrying white feather in its feet when building; editorial note considers this
 an accident]. Field, May 24th, 1890, p. 772.
- W. A. DURNFORD. York S.W.
Corncrake [*Crex pratensis*] **perching on a Tree** [on 3rd May, presumably at
 Elsecar]. Field, May 24th, 1890, p. 772.
- J. W. FAWCETT. Durham.
The Tree-Sparrow [*Passer montanus*] **in the County of Durham** [with
 details of habits, nidification, and localities]. Nat., Sep. 1890, pp. 277-278.

- J. W. FAWCETT. Durham.
The Tree Sparrow [*Passer montanus*] in County Durham [notes on habits, nidification, interbreeding with *P. domesticus*, etc.]. Nat., Dec. 1890, pp. 353-354.
- MISS C. FISHWICK. Furness.
A Few Lancashire Peculiarities, as noted by Drayton [in the Polyolbion, 1622; the barnacles and geese referred to]. Trans. Rochdale Lit. and Sci. Soc. for 1878-1888, publ. 1888, p. 62.
- RILEY FORTUNE. York Mid W.
Notes on the Starling [*Sturnus vulgaris*]; its habits, cries, nidification, and benefit to agriculture, as observed near Harrogate]. Nat., June 1890, pp. 167-168.
- R. FORTUNE. York Mid W.
Snipe [*Gallinago caelestis*]'s Nest with five eggs and White Blackbird [*Turdus merula*] near Ripon [both seen June 1st]. Nat., July 1890, p. 210.
- R. FORTUNE. York Mid W.
Notes on Migrants about Harrogate [*Crex* very scarce this year; *Hirundo* and *Chelidon* beginning to regain their lost ground; *Motacilla alba* unusually light in colour]. Nat., July 1890, p. 210.
- RILEY FORTUNE. York Mid W.
[A pair of] Redshanks [*Totanus calidris*] Breeding in Ripon Parks [June 1890]. Nat., July 1890, p. 210.
- RILEY FORTUNE. York Mid W.
Albino Blackbird [*Turdus merula*] near Harrogate [one captured 2nd June near Beckwithshaw]. Nat., July 1890, p. 210.
- RILEY FORTUNE. York Mid W.
Curious Incident relating to a Blackbird [*Turdus merula*]'s Nest [at Harrogate; a nest not forsaken when the tree on which it was built was moved]. Nat., Aug. 1890, p. 250.
- ALFRED FRYER, Jun. Cheshire.
The Rock Thrush [*Monticola saxatilis*] in Cheshire [seen (and observed closely for five minutes) on the Overton Hills, near Frodsham, April 4th, 1891; supposed to be a male; description given]. Zool., May 1890, p. 187.
- J. H. FRYER. York N.E., S.E., and Mid W.
York, Bootham. Natural History Club [Notes on *Turdus pilaris*, *T. merula*, *Ligurinus*, *Hirundo*, *Vanellus*, *Larus argentatus*, *Accipiter nisus*, *Accentor*, and *Corvus monedula* in the Vale of York]. N. H. J., June 15th, 1890, p. 92.
- ROBERT GARNER. Isle of Man.
Notes on the Natural History of the Isle of Man [with a surmise that the bird which Camden calls 'maup' and says is not found in the Island, is *Parus caruleus*, which is in Staffordshire called 'Tom maup' or 'Tom naup']. Trans. I. of Man N. H. S., vol. i., 1879-84 (publ. 1888), p. 88.
- J. G. GOODCHILD. York N.W.
Some of the Birds observed in Upper Swaledale [a list of 79 species, with remarks, and a few local names]. Nat., Aug. 1890, pp. 248-250.
- LIN. GREENING. Cheshire.
Hawfinch [*Coccothraustes vulgaris*] Breeding near Warrington [at Birchdale Appleton, Cheshire, Aug. 1889; particulars given]. Young Nat., April 1890, p. 71.
- J. H. GURNEY, Jun. York N.E.
Redbreasted Flycatcher [*Muscicapa parva*] at Scarborough [obtained Oct. 23rd, 1889, in a wood swarming with newly-arrived *Regulus cristatus* and *Scolopax rusticola*; the seventh British specimen]. Nat., Jan. 1890, p. 14.

- J. H. GURNEY, Jun. York S.E.
White Variety of the Little Gull [*Larus minutus*] shot near Flamborough Head, Oct. 29th, 1889; now in coll. John Marshall (Taunton). Zool., Jan. 1890, p. 19.
- J. H. G[URNEY]., Jun. York N.E.
Red-breasted Flycatcher [*Muscicapa parva*] in Yorkshire [one, immature, shot in a wood near Scarborough, Oct. 23rd; skin in possession of Mr. John Morley]. Field, Jan. 18th, 1890, p. 83.
- J. H. GURNEY, Jun. York S.E.
White Varieties of Gulls [including one of *Larus minutus* obtained at sea off Flamborough Head on Oct. 29th, 1890; now in Mr. Marshall's collection]. Field, Jan. 25th, 1890, p. 138.
- J. H. GURNEY, Jun. York S.E. and N.E.
Ornithological Notes from Norfolk [including notes as to *Loxia bifasciata* and *Regulus cristatus* in Yorkshire]. Zool., Feb. 1890, pp. 57, 58.
- J. H. GURNEY, Jun. Northumberland S.
Martinique Gallinule [*Porphyrio martinicus*] in Hants [and in Northumberland (from Hancock)]. Zool., Feb. 1890, p. 74.
- J. H. GURNEY, Jun. York S.E.
White Variety of the Little Gull [*Larus minutus*] at Flamborough [shot Oct. 29th; now in John Marshall's collection of varieties]. Nat., Feb. 1890, p. 38.
- J. H. GURNEY, Jun. York N.E.
On the Claim of the Pine Grosbeak [*Pinicola enucleator*] to be regarded as a British Bird [discussing the Whitby records]. Zool., April 1890, pp. 125-129.
- Durham, Cumberland, ? Derbyshire,
York N.E., Mid W., and S.W.
- J. H. GURNEY. York N.E., Mid W., and S.W.
On the Occasional Appearance in England of the Crested Tit [*Parus cristatus*] giving collected records for Yorkshire, Durham, Cumberland, Derbyshire (but this was at Meersbrook, Yorkshire); altogether 22 British specimens are noted, of which 7 are for Yorkshire alone]. Zool., June 1890, xiv. 210-213.
- J. H. GURNEY. Cumberland.
The Grey Phalarope [*Phalaropus fulicarius*] in Cumberland [the one shot in that county on Aug. 24th, 1866, was the earliest in date (except one) of all the 235 Phalaropes killed in Britain that year]. Nat., Dec. 1890, p. 354.
- G. H. CATON HAIGH. Linc. N.
Grey Shrike [*Lanius major* and *L. excubitor*] and **Peregrine** [*Falco peregrinus*] in Lincolnshire [several of the former noted, at North Cotes, Tetney, Marsh Chapel, and Grainsby, and one of the latter, at mouth of Humber, winter 1889-90]. Zool., April 1890, p. 140.
- G. H. CATON HAIGH. Linc. N.
Wheatear [*Saxicola ananthe*] in North Lincolnshire in March [inquiring for further information as to Mr. Harrison's record]. Zool., May 1890, p. 187.
- G. H. CATON HAIGH. Linc. N.
Arrival of Fieldfares [(*Turdus pilaris*) of Redwings (*T. iliacus*), and Grey Crows (*Corvus cornix*) in the Lincolnshire marshes; dates given for the last half dozen years; note also of all the five common British *Turdi* being seen at one time]. Field, Nov. 15th, 1890, p. 746.
- C. A. HAMOND. Lanc. W.
Little Stint [*Tringa minuta*] on the North-West Coast [giving extract from game-book recording *Tringa subarquata* (8 killed) and *T. minuta* (3 killed and several seen) at Arneside, Lancashire, Sep. 7th and 8th, 1876]. Field, Oct. 18th, 1890, p. 599.

JAMES HARDY.

Cheviotland.

Report of the Meetings of the Berwickshire Naturalists' Club for the year 1889 [noting *Ampelis garrulus* shot at Glanton Pyke, Whaup or Curlew Moor a name for Glanton Hill; *Larus ridibundus* and *Hirundo* noted at Ingram Haughs, 29th May; *Corvus corax* bred near the Linns, Linhope, 1889; one shot in Cheviot in the winter; *Turdus torquatus* at Linhope Linns; *Cuculus*, *Alauda arvensis*, *Vanellus*, *Anthus*, *Saxicola*, *Pratincola rubetra*, and *Tringoides* noted on the Breamish; *Cypselus*, *Chelidon*, and *Hirundo* at Branton; *Phylloscopus trochilus*, *Vanellus*, *Cuculus*, *Numenius arquata*, *Ardea cinerea*, *Alauda arvensis*, *Charadrius*, *Sturnus*, *Tinnunculus*, *Accipiter nisus*, *Sylvia atricapilla*, *S. cinerea*, *Phylloscopus sibilatrix*, *Anthus*, *Tringoides*, *Saxicola*, *Ruticilla phenicurus*, and *Corvus corax* noted, with particulars, for various localities in Cheviotland; *Fringilla caelebs*, *Sturnus*, *Muscicapa grisola* at Kielder; numerous birds specified as of the district of Kielder Burn (England) and Upper Lidderdale (Scotland), including both *Pratincole* on the Caldron Burn and on the Deadwater, *Lagopus scoticus* and *Tetrao tetrix* on Thorlieshope, *Gallinago caelestis* on Deadwater; *Anas boschas* at Harelaw Hill, and *Saxicola* at Paston]. Proc. Berw. Nat. Club Club, for 1889, vol. 12, No. 3 (pub. 1890), pp. 436-506.

H. S. HARLAND.

Northumberland S.

Rare Birds and Mammals preserved at Brighton [with mention of the Yellow-browed Warbler (*Phylloscopus superciliosus*) captured some forty or fifty years ago near Newcastle, Northumberland; now supposed to be in a private collection]. Field, Feb. 15th, 1890, p. 248.

H. S. HARLAND.

York S.W.

Weasel attacked by [two] Hawks and [three] Magpies [(*Pica rustica*), the 'hawks' not named; the combat, which began by the Weasel attacking a Pheasant, described]. Field, July 5th, 1890, p. 9.

ROBERT P. HARPER.

York N.E.

Notes from Scarborough [anent *Falco peregrinus*, *Stercorarius parasiticus*, *S. catarrhactes*, *S. pomatorhinus*, *Fulmarus*, *Larus marinus*, *L. glaucus*, *L. minutus*, *Porzana maruetta*, *Lanius excubitor*, cinnamon-coloured *Fringilla caelebs*, *Puffinus griseus*, *P. major*, *Procellaria leucorrhoea*, *Colymbus septentrionalis*, *Podiceps auritus*, and *Muscicapa parva*]. Zool., Jan. 1890, p. 21.

R. P. HARPER.

York N.E.

Eared Grebe [*Podiceps nigricollis*] near Scarborough [one shot Dec. 16th, 1889; the only Scarborough example, although *P. auritus* is not uncommon]. Zool., Feb. 1890, p. 77.

R. P. HARPER.

York N.E.

Little Auk [*Mergulus alle*] at Scarborough [six examples during the last two months; particulars of capture given]. Zool., April 1890, p. 143.

JOHN HARRISON.

York Mid W.

A Plea for the Starling [(*Sturnus vulgaris*) based upon personal experience at Wilstrop Hall; and also mentioning the measures taken against *Passer domesticus* in Cheshire and near Wilstrop]. Nat., Feb. 1890, pp. 45-46; note thereon, N.H.J., March 15th, 1890, p. 35.

J. W. HARRISON.

Linc. N.

Wheatear [*Saxicola oenanthe*] in North Lincolnshire in March [one at Goxhill, 23rd; earliest date on record]. Zool., April 1890, p. 144.

J. W. HARRISON.

Linc. N.

Increase of Jack Snipe [*Limnocyptes gallinula*] in North Lincolnshire [at Goxhill; notice also of *Gallinago caelestis*]. Zool., June 1890, p. 224.

R. C. HEDLEY.

Northumberland S.

Notes on the Birds which frequent the Hallington Reservoirs [near Corbridge-on-Tyne; *Larus ridibundus* (a breeding colony), *L. fuscus*, *L. canus*, *Sterna fluviatilis*, *S. cantiaca*, *Phalacrocorax carbo*, *Anas boschas*,

Naturalist.

Querquedula creca, *Clangula glaucion*, *Mareca*, *Tadorna cornuta*, *Fuligula ferina*, *Chauliasmus streperus*, *Dafila*, *Colymbus glacialis*, *Mergus merganser*, *Anser cinereus*, *A. segetum*, *Cygnus bewickii*, *Fulica*, both *Numenii*, *Vanellus*, *Ardea cinerea*, *Totanus calidris*, *Tringoides*, *Gallinago caelestis*, both *Limosa*, *Tringa alpina*, *Egialitis hiaticula*, *Tringa minuta*, *Tachybastes*, and *Podiceps nigricollis*, noted, many common, and some regularly nesting]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. 10. part 2, 1890, pp. 397-399.

WILLIAM HEWETT.

York S.E.

The Small-end Colouring of Eggs [discussed, with notes on *Lomvia troile*, *Alca torda*, *Rissa*, and *Fratercula*, at Flamborough Cliffs]. Sci. Goss., Dec. 1890, pp. 276-7.

JOHN F. HILLS, Secretary.

Lanc. S. or Cheshire.

Penketh School Field Club [notes on *Alcedo* (Padgate and Sankey Brook), *Sylvia rufa* (Halton), *Motacilla raii*, *Parus palustris*, *Cuculus*, *Hirundo*, *Acrocephalus phragmitis*, *Corvus cornix* and *Columba palumbus*]. N. H. J., May 15th, 1890, p. 72.

JOHN F. HILLS, Secretary.

Lanc. S., Cheshire, Derby.

Penketh School Field Club [*Corvus frugilegus*, *Ligurinus*, *Parus ceruleus*, *Columba anas*, *Regulus cristatus*, *Anas boschas*, *Cinclus*, *Corvus monedula*, *Phylloscopus rufus*, and *P. trochilus*]. N. H. J., June 15th, 1890, p. 90.

W. HODGSON.

Cumberland.

An Albino Wheatear [*Saxicola unanthe*] in Cumberland [near Workington, April 15th, 1889, one, in company with a dozen in ordinary plumage]. Nat., Jan. 1890, p. 11.

EDW. B. HOLWELL.

York S.E.

White Jay [*Garrulus glandarius*] in Yorkshire [one killed at Osgodby near Selby, Nov. 15th, having evaded shooting all through the summer; description given]. Field, Nov. 29th, 1890, p. 816.

H. KNIGHT HORSFIELD.

York Mid W.

Stone-Chat [*Pratincola rubicola*] at **Headingley, Leeds** [seen 24th Feb., 1890; first instance so near Leeds]. Nat., April 1890, p. 120.

RICHARD HOWSE.

Durham.

Catalogue of the Local Fossils in the Museum of the Natural History Society [at Newcastle; includes a record of the Great Auk (*Alca impennis*) at Marsden]. Nat. Hist. Trans. Northumb. Durh. and Newcastle, vol. 10, part 2 (1890), p. 229.

HENRY HYDE.

Cheshire.

[*Alauda arvensis* noted at an] Excursion to Ashley, for the Bollin Valley [on 21st April, 1888]. Rep. and Trans. Manch. Sci. Stud. Ass. for 1888 (publ. March 1889), p. 30.

PETER INCHBALD.

York S.E.

Grey Shrike [*Lanius excubitor?*] near **Hornsea** [an old female in fine plumage killed at Arram Hall, '20th of this month,' presumably Jan.]. Field, Feb. 1st, 1890, p. 158.

PETER INCHBALD.

York N.E.

Supposed Occurrence of the Blue Thrush [*Monticola cyaneus*] at **Scarborough** [seen in company with *Turdus musicus* and *T. viscivorus* on Oliver's Mount; described as thrush-like in appearance and closely resembling the blue thrush of Italy and the Riviera; surmise that it may be an escaped bird]. Field, Oct. 18th, 1890, p. 599.

PETER INCHBALD.

York S.E.

The Rock Pipit [*Anthus obscurus*] in **Holderness** [its occurrence in small flights at Hornsea since Oct. 20th, and habits described]. Field, Nov. 8th, 1890, p. 698.

April 1893.

- [PETER] INCHBALD. York S.E.
Shore Larks [*Otocorys alpestris*] on the East Coast [at Hornsea and Spurn, some recently]. Field, Nov. 15th, 1890, p. 746.
- PETER INCHBALD. York S.E.
Arrival of Snow Buntings [(*Plectrophanes nivalis*) in Holderness, presumably at Hornsea; a flock of fifty or sixty seen 3rd Nov., 1890]. Field, Nov. 15th, 1890, p. 746.
- PETER INCHBALD. York S.E.
Contents of Gizzard of the Rock Pipit [(*Anthus obscurus*) near Hornsea, consisted almost wholly of beetles]. Field, Nov. 29th, 1890, p. 816.
- J. M. JEFFCOTT. Isle of Man.
Address of the Retiring President [of Isle of Man N. H. S., delivered 27th March, 1890; on the Manx language; gollan-geayee, 'fork of the wind' = Swallow (*Hirundo rustica*); eeun = the generic term for bird]. Yn Lioar Manninagh, No. 5, Jan.-April, 1890, p. 155.
- A. W. JOHNSON. Lanc. W. or S., York S.E. and N.E.
[Numenius phaeopus, Tringa alpina, and Larus ridibundus, last in winter plumage, sent from Preston by F. Curtis; and Alcedo ispida seen from the train, near Pocklington, 18th Oct.] N. H. J., Nov. 15th, 1890, p. 151. [*Corvus cornix* at Bootham, York, 30th Oct., 1890]. N. H. J., Dec. 15th, 1890, p. 167.
- P. M. C. KERMODE. Isle of Man.
The Antiquities of the Parish of Bride [Isle of Man; Loughs Cranstall and Pherrick harbour *Fulica, Podiceps, Spatula* and *Fuligula ferina*]. Yn Lioar Manninagh, No. 7, Oct. 1890, i. 183.
- P. M. C. KERMODE [not signed]. Isle of Man.
Phenological Observations [giving Manx dates for *Turdus musicus*, *T. merula*, *Troglodytes*, *Alauda arvensis*, *Corvus frugilegus*, *Saxicola enanthe*, *Turdus viscivorus*, *Scolopax rusticola*, *Hirundo rustica*, *Vanellus vulgaris*, *Sula bassana*, *Phylloscopus trochilus*, *Cuculus*, *Cotile*, *Cypselus*, *Fringilla caelebs*, and *Crex*]. Yn Lioar Manninagh, No. 5, April 1890, pp. 160-163. [Dates given for *Scolopax rusticola*, *Turdus iliacus*, and *Corvus frugilegus*]. Yn Lioar Manninagh, No. 7, Oct. 1890, i. 198.
- E. P. KNUBLEY. York S.W.
Great Spotted Woodpecker [*Dendrocopus major*] at Liversedge, Yorkshire [a male, shot Nov. 8th]. Nat., Jan. 1890, p. 14.
- J. H. LECHE. Cheshire.
White Robins [*Erithacus rubecula*] and **Starlings** [(*Sturnus vulgaris*) near Chester; the Robins this year, the Starlings at the same place nearly thirty years ago]. Field, July 26th, 1890, p. 160.
- B. B. L[E].T[ALL]. York N.E., S.E., Mid W.
York, Bootham. Natural History, &c., Club [notes anent *Anser* (species not stated) *Emberiza schœnielus*, *Alcedo*, *Saxicola enanthe*, *Totanus calidris*, *Anas boschas*, *Parus major*, *Garrulus*, *Phylloscopus trochilus*, *Gallinago caelestis*, *Larus*, *Ardea cinerea*, *Corvus frugilegus*, *Accipiter nisus*, *Pica. Acridula caudata*, *Regulus cristatus*, *Pyrrhula*, *Motacilla melanope*, *Cinclus*, *Passer domesticus*, *Columba palumbus*]. N.H.J., May 15th, 1890, pp. 75-76.
- B. B. LETALL. York Mid W.
[Nest of Tringoides hypoleucos near Thorp Arch, June 7th, 1890, in precisely same spot as in 1889]. N.H.J., Oct. 15th, 1890, p. 132.
- B. B. LETALL. York Mid W.
[Cinclus aquaticus on the infant Aire, near Malham]. N.H.J., Nov. 15th, 1890, p. 151.

ROGER LOFTHOUSE.

York N.E., Durham.

Bird-Notes from the Tees District, during the late autumn and winter months, 1889-90 [anent the movements and occurrences of migrant and rare species; *Tringa alpina*, *Egialitis hiaticula*, *Sterna fluviatilis*, *S. macrura*, *Tringa canutus*, *Tadorna cornuta*, *Calidris*, *Tringa subarquata*, *T. minuta*, *Numenius arquata*, *Querquedula crecca*, *Limosa lapponica*, *Streptilas*, *Hydrochelidon nigra*, *Sterna cantiaca*, *Machetes pugnax*, *Porzana maruetta*, *Phalacrocorax carbo*, *Saxicola oenanthe*, *Motacilla lugubris*, *Alauda arvensis*, *Vanellus vulgaris*, *Sturnus vulgaris*, *Lynx*, *Pastor roseus*, *Turdus pilaris*, *T. iliacus*, *Corvus cornix* and *Syrnhaptus* mentioned]. Nat., April 1890, pp. 97-98.

T. A. LOFTHOUSE.

York N.E., Durham.

Arrival of Summer Birds [near Middlesbrough ; dates for *Phylloscopus rufus*, *Hirundo*, *Sylvia atricapilla*, *Phylloscopus trochilus*, *Motacilla raii*, and *Cotile*]. Field, Ap. 26th, 1890, p. 594.

CUMMING MACDONA.

Sheldrake [*Tadorna cornuta*] near Liverpool [stating, in criticism of note by 'W. H. B.,' that a pair visit Hoylake Golf Links every year to breed, and are now to be seen daily]. Field, June 14th, 1890, p. 892.

Northumberland, Durham, Cumberland,
Westmorland, Lancashire, Yorkshire.

H. A. MACPHERSON.

The Goldfinch [a lengthy and interesting article on the diminution in numbers and restriction in range of *Carduelis elegans*, with much detail as to its habits, migration, range, etc., and as to its former abundance and present scarcity in Northumberland, Durham, Cumberland, Westmorland, Lancashire, and Yorkshire]. Field, Aug. 9th, 1890, p. 214.

H. A. MACPHERSON.

Cumberland.

Wildfowl on the Solway [scarce, owing to mild winter ; *Anas boschas*, *Bernicla leucopsis*, *Dafila*, *Chaulelasmus*, *Spatula*, *Querquedula crecca*, *Fuligula ferina*, *F. cristata*, *F. marila*, *Clangula glaucion*, *Ædemia nigra*, *Æ. fusca*, *Harelda*, *Bernicla brenta*, *Anser segetum*, *A. brachyrhynchus*, *A. albifrons*, *Mergus merganser*, *Mergus* (sp. not stated), *M. albellus*, *Tadorna cornuta*, *Mareca*, *Colymbus glacialis*, and *C. septentrionalis* mentioned, with detail as to *Clangula*]. Field, Jan. 11th, 1890, p. 56.

H. A. MACPHERSON.

Cumberland, York S.E.

Storm Petrel [*Procellaria pelagica*] in Summer [in Cumberland in 1841, near Spurn, and elsewhere ; details]. Nat., Feb. 1890, p. 48.

H. A. MACPHERSON.

Cumberland, Westmorland, Furness.

The Tree Sparrow [*Passer montanus*] in the Lake District [where it breeds in three stations : near Howtown ; near Kirkoswald ; and in another Cumberland coast locality ; full discussion of habits, nidification, etc.]. Nat., March 1890, pp. 92-94.

H. A. MACPHERSON.

York N.W.

The Dotterel [*Eudromias morinellus*] in Yorkshire [near Dent, and on Woo Fell ; extracts from correspondence of T. C. Heysham, about 1831]. Nat., March 1890, pp. 95-96.

H. A. MACPHERSON.

Cumberland, York S.E.

The Shorelark [*Otocorys alpestris*] in Cumberland [on the salt-marshes, Feb. 1890 ; general notes also on the species are given, and as to its food at Spurn]. Nat., April 1890, pp. 115-116.

H. A. MACPHERSON.

York N.E., Northumberland,
Lincolnshire, Cumberland.

Auction Sale of North of England Rarities [Whitaker's duplicates : *Ardetta minuta*, Scalby Beck ; *Stercorarius catarrhactes*, Scarborough ; *Pastor roseus*, Yorkshire ; *Sterna dougalli* and *Procellaria pelagica* from coast of Northumberland ; *Podiceps auritus* from the Lincolnshire coast ; and *Loxia bifasciata* from Cumberland ; dates and other details given]. Nat., July 1890, p. 210.

May 1893.

- H. A. MACPHERSON. **Lanc. W. and S., Notts., Furness.**
Notes on Birds from Lancashire. Extracted from Letters of the late James Cooper [1840 to 1844; *Totanus canescens*, *Tringa subarquata*, *Limosa lapponica*, *Machetes*, *Upupa*, *Totanus glareola*, *Lanius excubitor*, *Mergulus alle*, *Tringa striata*, *Squatarola*, *Calidris*, *Hydrochelidon nigra*, *Totanus fuscus*, *Eudromias*, *Sterna macrura*, *Numenius phaeopus*, *Motacilla alba*, *Anthus obscurus*, *Procellaria leucorrhoea* all noted near Preston and Ulverston, and *Milvus iclinus* and *Otis tetrax* near Newark-on-Trent]. Nat., Aug. 1890, pp. 234-236.
- H. A. MACPHERSON. **Cumberland.**
The Greenshank (*Totanus glottis*) [an interesting account of the bird, its habits and occurrence on the Solway, etc.]. Field, Sept. 13th, 1890, p. 404.
- H. A. MACPHERSON. **Cumberland.**
Spotted Redshank [*Totanus fuscus*] in Cumberland [three killed in 1888 and 1889]. Nat., Oct. 1890, p. 318.
- H. A. MACPHERSON. **Cumberland, Furness.**
The Little Stint (*Tringa minuta*) [an interesting and detailed account of its occurrence in Cumberland, on the Solway Firth, and its absence from Furness and Walney Island; notes also on *T. subarquata* in Furness, *Machetes*, *Strepsilas*, and *Tringa canutus* in their passage across the Pennine Range]. Field, Oct. 4th, 1890, p. 501.
- H. A. MACPHERSON. **Cumberland.**
Garganey [*Querquedula circia*] in Cumberland [an adult female shot on the coast, 15th Aug., 1890]. Nat., Nov. 1890, p. 320.
- H. A. MACPHERSON. **Cheviotland, Durham, Lincolnshire, Cumberland.**
Eagles in the North of England [being records extracted from the 'Gentleman's Magazine,' for Cheviot Hill in 1751, Ryhope near Sunderland in 1765, and Lincolnshire in 1784, and their breeding in the Lake District to within the last years of the 18th century; *Aquila chrysaetos* and *Haliaetus albicilla* referred to]. Nat., Nov. 1890, p. 323.
- H. A. MACPHERSON. **Cumberland.**
Grey Phalarope [*Phalaropus fulicarius*] in Cumberland [and its dates of appearance noted in recording one on the coast, 23rd September, 1890]. Nat., Nov. 1890, p. 335.
- H. A. MACPHERSON. **Westmorland.**
Montagu's Harrier [*Circus cineraceus*] in Westmorland [one killed near Burgh, 15th Sept., 1890; has also occurred in Cumberland and on Walney Island]. Nat., Nov. 1890, p. 352.
- H. A. MACPHERSON. **Yorkshire, Lancashire, Cumberland.**
Shorelarks [*Otocorys alpestris*] and **Buntings** [a general article, with but casual references to the occurrence of the Shorelark in Yorkshire, Lancashire, and Cumberland]. Field, Nov. 15th, 1890, p. 745.
- H. A. MACPHERSON. **Cumberland.**
Nocturnal Migrations of Birds [in Cumberland; flights of *Tringa alpina*, *T. canutus*, *Edemia nigra*, *Numenius arquata*, *Tringoides*, *Turdus iliacus*, *Alauda arvensis*, *Larus fuscus*, and *Saxicola ananthe*, at different dates]. Field, Nov. 15th, 1890, p. 746.
- H. A. MACPHERSON. **Furness.**
Shore-Lark [*Otocorys alpestris*] on Walney Island [one shot Oct. 1890]. Nat., Dec. 1890, p. 354.
- H. A. MACPHERSON. **Cumberland.**
Bewick's Swan [(*Cygnus bewicki*) and its occurrence in Cumberland in 1889, discussed at considerable length; the occurrence of one in 1890, also of *Numenius arquata* and *Mergus merganser* on the Solway marshes]. Field, Dec. 20th, 1890, pp. 910-911.

- H. STAPYLTON MARSHALL. **Cheshire.**
Reported Occurrence of the Cuckoo [*Cuculus canorus*] in March [on the 12th at Woodchurch near Birkenhead; editor knows no authenticated instance before April]. *Field*, March 15th, 1890, p. 399.
- JAS. EARDLEY MASON. **Linc. N.**
Great Spotted Woodpecker [*Dendrocopus major*] near Alford [an adult female shot at Ailby, 25th Nov., 1889]. *Nat.*, Jan. 1890, p. 14.
- JAS. EARDLEY MASON. **Linc. N.**
Storm Petrel [*Procellaria pelagica*] near Alford in 1888 [seen 14th Nov., at Thoresthorpe, and killed two days later]. *Nat.*, Feb. 1890, p. 46.
- G. W. MURDOCK. **Westmorland.**
Swallows in March [*Chelidon* noted at Kendal on March 16th; *Sturnus vulgaris* noted as now in great numbers around Kendal, where they were unknown fifty years ago]. *Field*, March 29th, 1890, p. 472.
- G. W. MURDOCK. **Kendal.**
Woodcock [*Scolopax rusticola*] nesting in the Lake District [at Arnside; particulars given; has also nested at Levens]. *Field*, April 19th, 1890, p. 587.
- NEWMAN NEAVE. **Cheshire.**
Rainow, nr. Macclesfield [notes on *Dendrocopus major*, *Alcedo*, *Pica*, and *Cinclus*]. *N. H. J.*, Feb. 15th, 1890, p. 15.
- T. H. NELSON. **York N.E.**
Great Skua [*Stercorarius catarrhactes*] on the Yorkshire Coast [off Redcar known as 'Morrel Hen,' *S. crepidatus* and *S. parasiticus* as 'Allans,' and *S. pomatorhinus* as 'Big Allan']. *Zool.*, March 1890, p. 100.
- THOMAS H. NELSON. **York N.E., Durham.**
Bird-Notes from Redcar and Tees Mouth for 1889-1890 [being notes on migratory movements, etc., from 1889, Jan. 3rd, to 1890, Feb. 28th; anent *Cygnus*, *Phalacrocorax graculus*, *Podiceps griseigena*, *Squatarola helvetica*, *Coccythraustes vulgaris* (nesting), *Tringa minuta*, *T. subarquata*, *T. canutus*, *Streptilas*, *Sterna cantiaca*, *Tringa alpina*, *Stercorarius parasiticus*, *S. crepidatus*, *S. pomatorhinus*, *Anas boschas*, *Mareca*, *Xema sabinii*, *Corvus cornix*, *Scolopax rusticola*, *Porzana maruetta*, *Alauda arvensis*, *Fulmarus glacialis*, *Falco peregrinus* (Ingleby in Cleveland), *Pastor roseus*, *Otocorys*, *Mergulus alle*, *Fratercula*, *Lomvia troile*, and *Dendrocopus major*, nearly all at Redcar and Tees Mouth]. *Nat.*, April 1890, pp. 99-100; *Zool.*, April 1890, pp. 136-138.
- T. H. NELSON. **York N.E.**
Arrival of the Wheatear [(*Saxicola ananthe*) on sand-hills, Coatham and Redcar, 23rd March, 1890]. *Field*, April 5th, 1890, p. 500.
- T. H. NELSON. **York N.E.**
Ornithological Notes from Redcar [correcting an error of *Stercorarius parasiticus* which should be *S. crepidatus*, and giving omitted date for *Mergulus alle*]. *Zool.*, May 1890, p. 187.
- T. H. NELSON. **York N.E.**
The Yorkshire Naturalists' Union at Kildale-in-Cleveland [12th July, 1890; *Turdus musicus*, *T. viscivorus*, *T. merula*, *T. torquatus*, *Ruticilla phenicurus*, *Erithacus*, *Sylvia cinerea*, *Phylloscopus rufus*, *Ph. trochilus*, *Accentor*, *Passer domesticus*, *Troglodytes*, *Motacilla lugubris*, *Anthus pratensis*, *Hirundo*, *Chelidon*, *Cotile*, *Cypselus*, *Ligurinus*, *Fringilla coelebs*, *Pyrrhula vulgaris*, *Sturnus*, *Corvus frugilegus*, *Columba palumbus*, *Alcedo*, and *Gecinus* noted as seen during the day; notes also given on the occurrence at Easby of *Dendrocopus major*, *D. minor*, *Gecinus*, *Lynx*, *Certhia*, *Parus caudatus*, *Ardea cinerea*, *Tringoides*, *Porzana maruetta*, and *Gallinago major*; the occurrence several times at Ingleby Greenhow of *Archibuteo*, *Buteo*, and *Falco peregrinus*; and a record on good authority (E. B. Emerson) of *Dautias* in the grounds of Tollesby Hall near Middlesbrough]. *Nat.*, Sep. 1890, pp. 270-271.

R. NEWSTEAD.

Cheshire.

The Heron [*Ardea cinerea*], and Heronries of Cheshire and North Wales [stating two in Cheshire on which information is desired]. Research, March 1890, p. 203.

DIGBY S. W. NICHOLL.

Notts.

Reported occurrence of the Black-winged Stilt [*Himantopus candidus*] near Nottingham an error [the specimen being a foreign skin]. Zool., Jan. 1890, p. 25.

CHAS. OLDHAM.

Cheshire.

Bank Vole and Short-tailed Vole in North Cheshire [on the increase, natural consequence of decrease of *Falco tinnunculus*, etc.]. Zool., March 1890, p. 99.

CHARLES OLDHAM.

Cheshire, Lanc. S.

Hawfinches [*Coccothraustes vulgaris*] and **Green Peas** [in Cheshire and South Lancashire, discussed in detail]. Zool., Dec. 1890, p. 465.

R. E. PATON.

Cumberland.

Owl Nesting in a Rookery [at Southwaite Hill, Carlisle; species not stated, but editorial note states it was in all probability *Asio otus*, which nests upon a platform of sticks]. Field, June 28th, 1890, p. 979.

JNO. PHILIPSON.

Northumberland S., Cheviotland.

Address to the . . . Tyneside Naturalists' Field Club, read . . . May 15th, 1889 [with notes anent the colony of *Larus ridibundus* at Hallington Reservoir, 21st May, 1888; also at Harbottle Tarn, 21st June; *Tringoides* in the Coquet near Harbottle: *Tringa canutus* on the coast near Dunstanborough, 12th Sep.]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. 10, part 2, 1890, pp. 395 and 405.

JNO. PHILIPSON.

Northumberland S.

Matters of Interest to the Naturalist [being records of the occurrence of *Loxia curvirostra* in some numbers; *Columba turtur* at Seaton Burn; *Machetes* at Newbiggin-by-the-Sea, June 8th; curious var. of *Gallinago caelestis* near Morpeth; several *Archibuteo* in Northumberland and one on Newcastle Town Moor; and a curious brown *Perdix cinerea* near Morpeth]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. 10, part 2, 1890, p. 410.

JNO. PHILIPSON.

Cheviotland, Northumb. S., Durham, Yorkshire, Lincs.

Pallas's Sand Grouse [(*Syrrhaptes paradoxus*) in Northumberland and Durham; a detailed account of occurrences in 1888]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. 10, part 2, 1890, pp. 411-414.

JNO. PHILIPSON.

Northumberland S., Cheviotland, Lanc. S.

A Raid on Rooks [(*Corvus frugilegus*); discussing their habits and value or obnoxiousness to farmers; with notes on occurrences of Rookeries in Newcastle, on Holy Island, etc.; *Corvus monedula* also at Holy Island; notes also from Rossendale, Lincs. (H. Kerr)]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. 10, pt. 2, 1890, pp. 414-419.

JNO. H. PHILLIPS.

York N.E.

Waxwing [*Ampelis garrulus*] and **Dotterel** [*Eudromias morinellus*] in Central Ryedale [particulars of former occurrences given]. Nat., Jan. 1890, p. 15.

G. PULLEN.

Derbyshire.

White Variety of the Blackbird [(*Turdus merula*) near Derby; pure white]. Young Nat., Oct. 1890, p. 199.

G. PULLEN.

Derbyshire.

Manx Shearwater [*Puffinus anglorum*] near Derby [picked up exhausted at Brailsford, end of August 1890]. Young Nat., Oct. 1890, p. 199.

G. PULLEN.

Derbyshire.

Podiceps minor at Derby [seen on the Derwent, within a minute's walk of Derby Market-place]. Young Nat., Dec. 1890, p. 232.

- W. PYMAN. York N.E.
Six Partridges [*Perdix cinerea*] at a shot [near Whitby]. Field, Nov. 1st, 1890, p. 645.
- P. RALFE. Isle of Man.
Bird-life at Douglas Bay, Isle of Man [being notes on the occurrence of *Agialitis hiaticula*, *Tringa striata*, *Larus argentatus*, *L. ridibundus*, *L. fuscus*, *L. marinus*, *Ardea cinerea*, *Corvus cornix*, *Vanellus*, and *Phalacrocorax graculus*]. Zool., Sept. 1890, pp. 355-357.
- A. R[AWSON]. Westmorland and Furness.
Date of Arrival of the Cuckoo [(*Cuculus canorus*) in the Keswick valley, 2nd April, doubted]. Field, May 24th, 1890, p. 772.
- A. RAWSON. Westmorland and Furness.
Blackbird [*Turdus merula*]'s Nest in Rhubarb [in the centre of a plant, at Windermere]. Field, May 24th, 1890, p. 772.
- ROBERT H. READ. Northumberland.
Clydesdale Naturalists' Society [notes on the habits of *Cuculus canorus*, which in Northumberland uses the nests of *Pratincola rubetra*, *Accentor modularis*, and *Motacilla raii*]. Research, Feb. 1890, p. 187.
- G. RICHARDSON. York N.E.
Rooks [*Corvus frugilegus*] and Spring Gales [at Skelton; effects of latter destructive]. N. H. J., March 15th, 1890, p. 36.
- CHARLES ROBSON. Newcastle-on-Tyne.
Late Appearance of the Swift (*Cypselus apus*) [at Killingworth, near Newcastle-on-Tyne, 24th Sep., 1890]. Sci. Goss., Nov. 1890, p. 262.
- J. S. ROWNTREE. Cheshire.
House Martins [*Chelidon urbica*] preparing to leave [and gathering together in large numbers between Peel Causeway and Ashley, etc.]. Manchester Guardian, 9th Sep., 1889; N. H. J., Sep. 15th, 1890, p. 120.
- J. H. SALTER. York N.E.
With Gun and Field-glass on Yorkshire Coast [noting *Anas boschas*, *Mareca*, *Tringa striata*, *Plectrophanes*, *Numenius arquata*, *Charadrius pluvialis*, *Alauda arvensis*, *Gallinago caelestis*, *Sturnus*, *Turdus pilaris*, *Tadorna cornuta*, *Corvus monedula*, *Larus argentatus*, *Harelda*, *Columba livia*, *C. anas*, *Tinnunculus*, *Saxicola ananthe*, and *Colymbus*, all at Filey, Jan. 1st, 1887]. N. H. J., April 15th, 1890, xiv. 40-43.
- J. H. SALTER. Lanc. S., Cheshire.
Manchester Notes [anent *Hirundo*, *Cypselus*, *Cotile*, *Phylloscopus trochilus*, *Sylvia curruca*, *Cuculus*, *Regulus cristatus*, *Acredula caudata*, *Pyrrhula*, *Locustella*, *Alcedo*, and *Phasianus*]. N. H. J., June 15th, 1890, p. 96.
- J. H. SALTER and N. NEAVE. Lanc. S., Cheshire.
Manchester Notes [anent *Tinnunculus*, *Hirundo*, *Turdus pilaris*, *T. iliacus*, *Pyrrhula*, *Parus palustris*, *Turdus musicus*, *T. viscivorus*, *Emberiza miliaria*, *Parus major*, *Perdix cinerea*, *Certhia*, *Fringilla caelebs*, *Motacilla*, *Turdus merula*, *Vanellus*, *Alauda arvensis*, *Gallinula chloropus*, *Emberiza citrinella*, *Parus major*, *P. ceruleus*, *P. ater*, *Podiceps cristatus*, *Tachybaptus*, *Fuligula cristata*, *Fulica*, *Regulus cristatus*, *Emb. schæniclus*, *Anthus pratensis*, *Ligurinus*, *Accentor*, *Pica*, and *Erithacus*]. N. H. J., April 15th, 1890, xiv. 56.
- J. H. SALTER, NEWMAN NEAVE. Cheshire, Lanc. S.
Manchester Bird-Notes [anent *Phasianus*, *Anas boschas*, *Phylloscopus rufus*, *Motacilla raii*, *Ph. trochilus*, *Larus argentatus*, *Hirundo*, *Acredula caudata*, *Turdus musicus*, and *Tringoides*]. N. H. J., May 15th, 1890, p. 80.
- J. H. SALTER, N. NEAVE. Derbyshire, Cheshire.
On the Derbyshire Border [of Cheshire, near Macclesfield; *Vanellus*, *Pica*, *Gallinago caelestis*, *Turdus torquatus*, *Linota flavirostris*, *Cinclus*,
 May 1893.

Motacilla melanope, *Alcedo*, *Ardea cinerea*, *Tinnunculus*, *Columba anas*, *Numenius arquata*, *Lagopus scoticus*, *Anthus pratensis*, *Charadrius plumbealis*, *Tetrao tetrix*, *Accipiter nisus*, and *Spatula*, treated of in chatty style]. N. H. J., Sep. 15th, 1890, pp. 99-102.

W. SAMPEY.

Notts.

Arrival of Fieldfares [*Turdus pilaris* seen at Bleasby near Southwell, 19th Oct. 1890, a large flock; earliest date for twenty years of careful observation; *Corvus cornix* not arrived yet]. Field, Oct. 25th, 1890, p. 616.

HUGH SCOTT.

'Dogger Bank.'

Water Rail [*Rallus aquaticus*] **at Sea** [one came aboard a vessel hove to on Dogger Bank, 19th Oct. 1890, during a gale]. Field, Nov. 15th, 1890, p. 746.

HENRY SEEBOHM.

York N.E.

[**Exhibition of** *Turtur orientalis*, shot 23rd Oct. 1889 at Nab Gutter, a small stream running from Oliver's Mount, Scarborough, down to the sea; particulars given and shooting of *Muscicapa parva* in same locality on same day noted]. P.Z.S., 6th May, 1890, Part 25, pub. 1890, p. 361; Field, May 17th, 1890, p. 708; Zool., June 1890, p. 226.

H. H. SLATER.

Cumberland.

Crossbills [*Loxia curvirostra*] **in Cumberland** [a large flock on Nov. 30th]. Nat., Jan. 1889, p. 24.

H. H. SLATER.

York Mid W.

The Yorkshire Records for the Great Black Woodpecker [(*Picus martius*); the Ripley record of 1846 again condemned]. Nat., Feb. 1890, p. 38.

HENRY H. SLATER.

York.

Loxia bifasciata in Yorkshire [repetition of record published in the Naturalist, for Oct. 1889]. Zool., March 1890, p. 105.

C. E. SMITH.

York N.E. and Mid W.

[**Bird-notes for York district**; *Sylvia rufa*, *Alcedo*, *Phylloscopus trochilus*, and *Sylvia curruca* at Askham, 17th Sept.; *Tringoides* at Clifton Ings, 20th Sept.; *Fulica* and *Larus argentatus* at Hob Moor, 5th Oct.; last *Hirundo* seen 9th Oct.; last *Chelidon*, 13th Oct.; *Turdus pilaris* seen 1st Nov.]. N. H. J., Dec. 15th, 1890, p. 167.

JOS. E. SMITH.

Cheshire, Derbyshire, Lanc. S.

Manchester Notes [anent nest of *Gallinula chloropus* at Gatley]. N. H. J., May 15th, 1890, p. 79. [Nest of *Tringoides* half-way up Kinderscout, of *Anthus pratensis* on Cobden Edge, above Strines, *Alcedo* near Chorlton; dates and details given]. N. H. J., Dec. 15th, 1890, pp. 171-172.

JOS. SMITH.

Lanc. S.

A Walk to Birkdale [Nest of *Columba anas* found in a rabbit's hole]. N. H. J., Nov. 15th, 1890, xiv. p. 147.

C. E. STOTT.

Cheshire.

Jackdaw [*Corvus monedula*] **killing Rats** [at Northwich, Cheshire]. Zool., Nov. 1890, p. 437.

THOS. THOMPSON.

Durham.

Willow Wren [*Phylloscopus trochilus*] **in January** [one shot 16th Jan., 1890, between Blaydon and Scotswood]. Field, Jan. 25th, 1890, p. 138.

THOMAS THOMPSON.

York N.W.

Unspotted Eggs of the Spotted Flycatcher [(*Muscicapa grisola*) at Croft Spa]. Field, Aug. 30th, 1890, p. 346.

THOS. THOMPSON.

Cheviotland.

Arrival of Fieldfares [(*Turdus pilaris*); several seen on Holy Island, Oct. 7th; also a flock of *T. iliacus*]. Field, Oct. 25th, 1890, p. 616.

- C. F. THORNEWILL. Derbyshire.
Calendar of Nature, 1889 [for Burton-on-Trent district: dates given for *Alauda arvensis* at Ashby Road, and for *Hirundo rustica*, *Phylloscopus trochilus*, *Cuculus*, *Crex*, and *Acrocephalus phragmitis*]. Ann. Rep. Burton-on-Trent N. H. S., for year ending 30th Sep., 1890, p. 21.
- JULIAN G. TUCK. York N.E. and S.E.
Seafowl at Scarborough [being notes on *Lomvia troile*, *Alca torda*, *Rissa*, *Larus argentatus*, *Falco peregrinus*, *Phalacrocorax carbo*, *Ædemia nigra*, *Larus fuscus*, and *Fratercula*, at Flamborough Cliffs and Filey Brigg, June 1890]. Zool., Oct. 1890, pp. 385-386.
- J. R. TUTIN. York N.E.
Wordsworth in Yorkshire [an extract from Dorothy Wordsworth's journal: Thrushes (*Turdus musicus*) noted singing at Rievaulx Abbey, 13th July, 1802]. Yorksh. Notes and Queries, Part 19, April 1890, p. 259.
- J. T. TRISTRAM VALENTINE. Derbyshire.
Little Bittern [*Ardetta minuta*] in Derbyshire [a male shot at Langwith, spring of 1889]. Zool., Sept. 1890, p. 357.
- EDGAR R. WAITE. Linc. N.
Red-throated Diver [*Colymbus septentrionalis*] at Alford, Lincs. [a female taken alive, 27th Dec. 1889; sent by J. E. Mason]. Nat., March 1890, p. 94.
- EDGAR R. WAITE. York S.W.
Great Grey Shrike [*Lanius excubitor*] at Middleton, Leeds [on the 17th Jan., 1890; is var. *L. major*]. Nat., March 1890, p. 94.
- EDGAR R. WAITE. York S.E.
The Yorkshire Naturalists' Union at Lowthorpe near Driffield [26th May, 1890; 42 birds, 27 resident and 15 migrant, observed, viz., *Turdus viscivorus*, *T. musicus*, *T. merula*, *Pratincola rubetra*, *Erithacus*, *Sylvia curruca*, *S. atricapilla*, *S. hortensis*, *Regulus cristatus*, *Phylloscopus trochilus*, *P. rufus*, *Acrocephalus phragmitis*, *Locustella*, *Accentor modularis*, *Acredula rosea*, *Parus cœruleus*, *Troglodytes*, *Anthus* (two species), *Muscicapa grisola*, *Hirundo*, *Chelidon*, *Cotile*, *Ligurinus*, *Passer domesticus*, *Fringilla cœlebs*, *Linota cannabina*, *Emberiza miliaria*, *E. citrinella*, *E. schœniclus*, *Sturnus*, *Corvus monedula*, *C. frugilegus*, *Alauda arvensis*, *Cypselus*, *Cuculus*, *Columba palumbus*, *Phasianus*, *Perdix*, *Gallinula*, *Fulica*, and *Vanellus*]. Nat., July 1890, pp. 205-206.
- EDGAR R. WAITE. York Mid W.
Black-headed Gull [*Larus ridibundus*] at Walton, near Thorp Arch [a young bird in first plumage, with some down, 24th June, 1890]. Nat., July 1890, p. 210.
- EDGAR R. WAITE. York S.W.
The Yorkshire Naturalists' Union at Bretton Park [14th June, 1890; 26 resident and 17 migrant birds noted, viz.: *Turdus viscivorus*, *T. musicus*, *T. merula*, *Pratincola rubetra*, *Ruticilla phœnicurus*, *Erithacus*, *Sylvia cinerea*, *S. hortensis*, *Phylloscopus rufus*, *P. trochilus*, *Acrocephalus phragmitis*, *Accentor*, *Parus major*, *P. cœruleus*, *Troglodytes*, *Motacilla lugubris*, *M. raii*, *Anthus* (both), *Muscicapa grisola*, *Hirundo*, *Chelidon*, *Cotile*, *Ligurinus*, *Passer domesticus*, *Fringilla cœlebs*, *Emberiza citrinella*, *Sturnus*, *Garrulus*, *Pica*, *Corvus monedula*, *C. frugilegus*, *Alauda arvensis*, *Cypselus*, *Cuculus*, *Tinnunculus*, *Columba palumbus*, *Phasianus*, *Crex*, *Gallinula*, *Fulica*, *Vanellus*, and *Tringoides* noted, with particulars as to nesting of eight of them]. Nat., July and Aug. 1890, pp. 224-225.
- EDGAR R. WAITE. York Mid W.
Remarkable Swallow [*Hirundo rustica*]'s Nests at Wilstrop, near York [built with and like those of Martins (*Chelidon urbica*) under eaves]. Nat., Sep. 1890, p. 258.

- JOHN WARD. York S.W. and N.W.
Nesting of the Cirl Bunting [*Emberiza cirlus*] in Yorkshire [at Lofthouse in 1882 and in 1889 near Flushdyke, Ossett; detailed particulars and editorial note given]. Nat., May 1890, p. 148.
- JOHN WARD. York S.W.
Nesting of the Cirl Bunting [*Emberiza cirlus*] at Lofthouse, near Wakefield [re-affirmed in answer to editorial criticism of former note]. Nat., Oct. 1890, p. 320.
- JOHN WARD. York S.W.
Turtle Dove [*Turtur communis*] at Lofthouse near Wakefield [a fine male 21st May, 1890; details given]. Nat., Nov. 1890, p. 335.
York S.E., N.E., S.W., Mid W., and N.W., Derbyshire,
 Linc. N., Cumb., Lanc. S. and W., Westmld.,
 Furness, Northumb. S., Cheviotland, Durham.
- JOHN WATSON. Furness, Northumb. S., Cheviotland, Durham.
The Northern Distribution of the Dotterel [(*Eudromias morinellus*) discussed, and numerous records quoted from the various northern counties of England; also some most interesting original notes by various persons]. Westm. Note-Book and Nat. Record, Sep. and Dec. 1889, pp. 162-164, and 176-179.
- J. SPENCE WATSON. Lanc. S.
The Cuckoo [(*Cuculus canorus*) at Heaton Mersey near Manchester]. N. H. J., Sep. 15th, 1890, p. 117.
- S. C. WAY. Durham.
Cat Catching Wildfowl [one at Durham described as adept at catching *Gallinula chloropus* and *Anas boschas* on the ice]. Field, Dec. 27th, 1890, p. 948.
- E. W. WEST. York S.W.
Singular Fatality to a Rook [(*Corvus frugilegus*) near Rotherham; entangled in a forked branch]. Field, March 8th, 1890, p. 361.
- LEONARD H. WEST. York N.E.
Alpine Swift [*Cypselus melba*] at Scarborough [repetition of record of the one he saw near Oliver's Mount in 1880]. Field, Nov. 1st, 1890, p. 668.
- J. A. WHELDON. York S.E.
Colouring of Eggs [discussed; *Larus argentatus*, *Lomvia troile*, *Alca torda*, all on Yorkshire Cliffs, cited]. Sci. Goss., Feb. 1890, p. 45.
- J. A. WHELDON. York S.E.
Colour of Eggs [a certain Guillemot (*Lomvia troile*) near Flamborough invariably lays white eggs]. Sci. Goss., May 1890, p. 117.
- J. WHITAKER. Notts.
Osprey [*Pandion haliaëtus*] in Notts [one shot in mid-November at Shire Oaks]. Zool., Jan. 1890, p. 19.
- J. WHITAKER. Notts.
Variety of Great Tit [(*Parus major*); near Nottingham]. Zool., March 1890, p. 107.
- J. WHITAKER. Notts.
Varieties in Wild Pigeons [including a pied one of *Columba palumbus* in North Notts]. Zool., Oct. 1890, p. 389.
- J. WHITAKER. York N.W., Notts.
Arrival of Fieldfares [(*Turdus pilaris*), Sept. 27th, 1890, near Northallerton, when grouse-driving; *Corvus cornix* also; earliest dates for Notts. are Sept. 12th, 1874, and Sept. 21st, 1877, both near Rainworth]. Field, Oct. 25th, 1890, p. 616.

- J. WHITAKER. **Notts.**
Date of Arrival of Jack Snipe [*Limnocryptes gallinula*] at Rainworth, Notts., Sept. 1st, 1867]. Field, Nov. 15th, 1890, p. 740.
- J. WHITAKER. **Notts.**
Pine Grosbeak [*Pinicola enucleator*] in Nottinghamshire [shot near Watnall, 30th Oct., 1890; new for Notts., and the sixth authenticated British example]. Zool., Dec. 1890, p. 464.
- J. WHITAKER. **Notts.**
Pine Grosbeak [*Pinicola enucleator*] in Notts [one, a male, shot near Watnall, date not given; stated to be the sixth British occurrence]. Field, Dec. 6th, 1890, p. 850.
- F. B. WHITLOCK. **Notts.**
Notes on the Tree Sparrow [*Passer montanus*] as observed in South Notts; and compared with *P. domesticus*. Nat., Feb. 1890, pp. 43-44.
- F. B. WHITLOCK. **Notts.**
Dunlins [*Tringa alpina*] and **Ringed Plovers** [*Ægialitis hiaticula*] in Notts [their habits and time of appearance]. Nat., Feb. 1890, p. 46.
- F. B. WHITLOCK. **Notts.**
Autumn Bird-Notes from Notts [in 1889; notes anent *Parus caruleus*, *P. major*, *P. ater*, *P. caudatus*, *Dendrocopus major*, *Porzana maruetta*, *Linota rufescens*, *L. linaria*, *Fringilla montifringilla*, *Sterna nigra*, *S. hirundo*, *Falco peregrinus*, *Botaurus stellaris*, *Pandion*, in South Notts; also some Norfolk notes]. Nat., Feb. 1890, p. 47.
- F. B. WHITLOCK. **Notts.**
Some further Notes on the Tree Sparrow [*Passer montanus*], its habits and nidification as observed in Notts; reference also to *Ligurinus*, *Passer domesticus*, and *Sylvia hortensis*. Nat., May 1890, pp. 155-156.
- F. B. WHITLOCK. **Notts, Durham.**
Notes on the Tree Sparrow [*Passer montanus*]; comparison of writer's own Notts observations with J. W. Fawcett's Durham ones; interpairing with *P. domesticus* discussed]. Nat., Oct. 1890, pp. 319-320.
- C. H. B. WOODD. **York Mid W.**
Vertebrate Fauna of Langstrothdale, Mid-West Yorkshire [enumerating, with remarks, 66 species of birds]. Nat., May 1891, pp. 135-136.
- T. D. WRIGHT. **Lanc. S. and W.**
Bird-Egg Curiosities [discussed; reference made to *Emberiza citrinella*, *Passer domesticus*, *Turdus merula* (Bacup), *Crex*, *T. musicus*, *Linota cannabina* (Lancaster), *Pica caudata* (do.), *Fulica*, *Gallinula chloropus*, *Chrysomitris*, and *Perdix cinerea*, presumably near Lancaster]. Sci. Goss., Jan. 1890, pp. 7-9.
- JOHN WRIGLEY. **Lanc. S.**
A Curious Site for a [Blue] Tit [*Parus caruleus*]'s Nest [at Formby, in a disused iron pump; details]. Field, June 21st, 1890, p. 906.
- JOHN WRIGLEY. **Lanc. S.**
Goosander [*Mergus merganser*] in Lancashire [two young males shot at Formby, 27th Sep., 1890]. Field, Oct. 4th, 1890, p. 501.

ERRATUM.

Mr. Cordeaux calls our attention to an error in the present instalment of Bibliography, at p. 122, wherein the tens of thousands of Shore-larks are represented as being on the Humber coast, whereas they were at Heligoland.

MASSEE'S BRITISH FUNGUS-FLORA.

British Fungus-Flora: A Classified Text-book of Mycology. By GEORGE MASSEE: in three volumes. VOL. II. Price 7s. 6d. Geo. Bell and Sons, London, 1893.

The author of this important work is evidently desirous that the three volumes shall be in the hands of mycological students in readiness for the coming season. No time has been lost in bringing out Vol. II., which, like its predecessor, shows that no efforts have been spared in its production. The excellent manner in which the descriptions of species have been drawn up leaves nothing to be desired, and the small drawings of thirty-nine species will doubtless prove useful to the student. The groups dealt with are Ochrosporæ—in which the puzzling genus *Cortinarius* covers 100 pages,—Rhodosporæ, and a portion of the Leucosporæ. In the latter is included the genus *Laccaria*, which was originally proposed by Berkeley, and is readily distinguished from *Clitocybe* by its rough globose spores and mealy gills. Few changes are perceptible in this volume, but it is sufficient to know that the work is up to date and reliable.

H.T.S.

NOTE—COLEOPTERA.

Soronia punctatissima near Leeds.—Under the bark of a birch-tree in a wood between Chapel-Allerton and Roundhay I lately came across the very rare *Soronia punctatissima*. Its colour was almost identical with that of the decaying bark, and it was only by chance that in the dim light I first noticed one. A closer search produced four more. Fowler's record in his *British Coleoptera* is as follows:—'Very local, Shirley and Esher in birch (Power), Darent, Chatham, Combewood, Addington, Norwood, Belvedere, Shiere, Hastings, Isle of Wight, Dean Forest, Repton, Scarborough, Liverpool district, Dunham Park, Stretford, Northumberland district; Scotland, local, Tweed, Tay, and Moray districts.'—W. F. BAKER, Leeds, April 25th, 1893.

NOTES AND NEWS.

Our colleague, Mr. W. Barwell Turner, F.R.M.S., is having his important work on the Freshwater Algæ of East India (especially Desmids) published by the Royal Swedish Academy of Sciences as part of their publications, but to cover part of the great cost of its production he has issued proposals for the issue of a limited number of copies to subscribers at £1 10s. 0d. each. The work will be worthy of its author's reputation, both as an artist and an algologist, and we trust that any of our readers who wish to be among the subscribers will at once address themselves to Mr. James Miles, bookseller, Bond Street, Leeds.

A specimen number of 'Science and Art and Technical Education', which is edited by Mr. John Mills, F.R.A.S., which with its April number reached its seventh volume and 73rd number, has reached us. It consists of a series of popular and gossippy articles on subjects more or less scientific, freely illustrated. We notice that there are numerous portraits of science teachers and of eminent scientific luminaries, and we regret also to notice that the number before us is the first of a 'new series', a complication which is always better-avoided.

Naturalist,

A FEW PLANTS OF SOUTH-WEST CUMBERLAND.

LISTER PETTY,

Ulverston.

THESE notes from the Duddon area of South-West Cumberland were made some years ago, and, except where otherwise stated, the plants are still in the localities where then noticed. Although no species here recorded is new to the county, amongst the aliens will be found some which are at least uncommon. To my friends, especially the Rev. F. A. Malleon, of Broughton-in-Furness, I am indebted for plants which they allow me to include, and for this permission my thanks are due. Mr. William Hodgson, A.L.S., very kindly read my list for me, and to him it owes something, as will be seen.

A. = Alien; N.A. = Naturalised Alien; D. = Denizen; N. = Native.

Helleborus viridis L. (N.) Near Lady Hall; Rev. F. A. Malleon. In a field, close to the hedge, outside the Duddon Woods; Miss M. Whineray.

From the latter station I saw a specimen just after it was gathered. The locality seems to represent Dickinson's in the 'Phytologist,' 1861, pp. 222 and 286. I can gain no information of the plants 'in the Duddon Woods,' as recorded by Mr. Tweddle in Miss Martineau's 'Guide to the Lakes,' ed. of 1861, repeated in Linton's 'Lake Country,' 1864, and quoted by Mr. Baker in his 'Flora of English Lake District,' 1885. Mr. Hodgson tells me he has 'seen lists in Mr. Tweddle's handwriting in which the green hellebore is mentioned as "growing in the Duddon Woods—scarce."' This I suppose must settle the matter, though the plants have not recently been seen.

Aquilegia vulgaris L. (N.) Duddon Woods; Rev. F. A. Malleon. 'Probably quite indigenous there;' Mr. W. Hodgson.

Delphinium Ajacis Reichb. (N.A.) Duddon Woods; Rev. F. A. Malleon. 'Quite naturalised now.' The only other record for the county known to me is in Baker's 'Flora.' 'A weed in a corn field at Dean, 1874,' found by Mr. W. B. Waterfall; in which position it was undoubtedly an alien, and is marked as such.

Meconopsis cambrica Vig. (A.) Beck-foot near a house; i.e., the foot of Logan Beck.

Corydalis claviculata DC. (N.) Clearings in the woods near Buckman Brow; Rev. F. A. Malleon and others.

- Cardamine amara** L. (N.) Duddon Woods, near Beck-foot; Rev. F. A. Malleeson.
- Malva moschata** L. (N.) On rubbish heaps about the old furnace near Duddon Bridge.
- Tilia parvifolia** Ehrh. (D.) Duddon Woods; Rev. F. A. Malleeson.
- Impatiens noli-metangere** L. (D.) Duddon Bridge, as recorded by Joseph Robson in 'Phytologist,' 1854, p. 2. In the stream near the old furnace near Duddon Bridge.
- Euonymus europæus** L. (N.) Duddon Woods and the hedges about them.
- Cratægus laciniata** Wallr. (N.) Probably this, but not seen in flower. A tree in the Duddon Woods.
- Ribes rubrum** L. (D.) High up in the Duddon Woods, above High Duddon.
- Sedum album** L. (A.) Thwaites Bridge.
- Drosera anglica** Huds. (N.) On Stonstir or Stoneshead Fell, with *D. rotundifolia* (specimen seen by Mr. J. G. Baker).
- Myrrhis odorata** Scop. (D.) Road-side and ground about the Saw-mills, near Duddon Bridge. (Formerly there was a garden here; the remains of a few old-fashioned perennials still survive.)
Mr. Hodgson writes:—'I have seen old women rub the inside of bee-hives with the leaves; the idea being that the fragrance thereby attaching to the "skep" had a sedative influence on the insects newly transferred to a fresh home.' In one part of Lancashire (i.e., Leck), I am told that the old oak furniture used to be rubbed with the seed-vessels before the seeds were quite ripe. The oily nature of the juice thus expressed, and the roughness of the seed-vessels giving a most beautiful polish. This rubbing was hard work and the plant disliked in consequence by the young women.
- Linaria Cymbalaria** Mill. (A.) At Thwaites, on a wall.
- Mimulus luteus** L. (A.) Thoroughly naturalised on the side of the Duddon near Duddon Bridge. Not so abundant now as on the Lancashire side.
- Narcissus pseudo-narcissus** L. (N.) Duddon Woods, as recorded by Dickinson in Miss Martineau's 'Guide,' ed. of 1861.
- Convallaria majalis** L. (N.) In the woods at Beck-foot. Locally abundant.
- Lilium Martagon** L. (A.) Naturalised on the banks of the Duddon; Mr. J. W. Fawcitt.
- Paris quadrifolia** L. (N.) In the woods about the old furnace near Duddon Bridge; Rev. F. A. Malleeson.

- Hymenophyllum unilaterale** Bory. (N.) On rocks in the Duddon; Rev. F. A. Malleson.
- Lomaria spicant** Desv. var. **furcans** Moore. (N.) Woods at Beck-foot.
- Asplenium marinum** L. (N.) On the rocks, not far from Millom; Messrs. R. Nelson and Edwards.
- This, by the way, is *not* the locality given to me, but it is quite near enough. Seemingly it is neither of Mr. Edwin Green's localities in 'Phytologist,' 1861, p. 68 ('Plants of Holborn Hill').
- Ceterach officinarum** Willd. (N.) On a wall near Thwaites.
- Cystopteris fragilis** Bernk. (N.) Formerly rather abundant on the walls along the road between Duddon Bridge and the old Furnace. Almost extinct there now.
- Phegopteris Dryopteris** Fée. (N.) Duddon Woods. Woods at Beck-foot, near Ulpha, as recorded by Dickinson in Miss Martineau's 'Guide,' ed. 1861.
- Phegopteris polypodioides** Fée. (N.) Duddon Woods. Woods at Beck-foot. Var. *multifida*. In the ditches at Beck-foot—sparingly.
- Osmunda regalis** L. (N.) In the woods and some of the damp pastures in this district. Not particularly localised for obvious reasons. Not uncommon.

It may interest Mr. P. H. Grimshaw to know that in 1887 I saw the plants given below. They are included because not many people besides ourselves have seen them, and they confirm his records.

- Cheiranthus cheiri** L. (N.? here) At Calder Abbey.
- Mimulus moschatus**. (Garden Alien.) Amongst stones on the Calder, near Sellafield.
- Convallaria majalis** L. (N.) At Stock Gill. First recorded by Joseph Robson in 'Phytologist,' 1854 ('Plants of Gosforth and District'). Robson's Dale-Garth is only another name for Stanley Gill.

NOTE—ZOOPHYTES AND POLYZOA.

Zoophytes and Polyzoa on the Lincolnshire Coast.—On February 10th, 1892, Mr. W. Bellamy obtained for me at Skegness some 'sea-weed,' consisting principally of Zoophytes and Polyzoa, since named for me with great kindness by Mr. R. Kirkpatrick of the British Museum (Natural History), as follows:—HYDROIDA: Sea-fir Zoophyte (*Sertularia abietina*); Sickle Coralline (*Hydrallmania falcata*). POLYZOA: Sea-mat (*Flustra foliacea*); Silk Coralline (*Vesicularia spinosa*).—J. BURTT-DAVY, Department of Botany, University of California, Berkeley, Cal., U.S.A., April 6th, 1893.

May 1893.

EROSION OF THE YORKSHIRE COAST.

Being the Report of the Coast Erosion Committee of the Yorkshire Naturalists' Union for 1892.

REV. E. MAULE COLE, M.A., F.G.S.,

Vicar of Wetwang, East Yorkshire; Hon. Sec. to the Yorkshire Naturalists' Union Coast Erosion Committee.

COAST EROSION COMMITTEE.—It sounds brawly—one can almost fancy the very waves trembling in their shoes when they heard that a band of picked men were about to record their misdeeds, and tell them, like Smellfungus, to the world. 'This Committee,' says the official document, 'proposes to observe the present changes and past condition of the sea-coast in order to determine the rate of erosion, and the influence of the artificial abstraction of shingle or other material in that action.'

'This committee.' It reminds one of the story of the cheeky boy, who, when asked how many they were in family, replied, 'Well, if you count the girls, we are seven; but I'm one.' In fact I am the committee and have been so all along, and therefore beg to make my report in my own way, no man forbidding me.

Last year I furnished 'Notes of certain Measurements made by the Secretary for future reference,' published in the 'Naturalist,' April 1892. This year I visited some of the stations with the following results:—

SEWERBY.

	yds.	ft.	ins.
1.—Original measurement, Jan. 11th, 1889	70	1	7
New ,, June 9th, 1892	68	0	8½
Loss in 3 years 5 months	<u>2</u>	<u>0</u>	<u>10½</u>
2.—Original measurement, Jan. 11th, 1889	81	2	10
New ,, June 9th, 1892	80	1	3
Loss in 3 years 5 months	<u>1</u>	<u>1</u>	<u>7</u>

SANDS COTTAGE, BRIDLINGTON BAY.

	ft.	ins.
1.—Original measurement, Aug. 2nd, 1889	44	4
New ,, June 9th, 1892	<u>33</u>	<u>7</u>
Loss in 2 years 10 months	<u>10</u>	<u>9</u>
2.—Original measurement, Aug. 2nd, 1889	76	0
New ,, June 9th, 1892	<u>71</u>	<u>7</u>
Loss in 2 years 10 months	<u>4</u>	<u>5</u>

HILDERTHORPE.

	yds.	ft.	ins.
2.—Original measurement, Feb. 13th, 1891	61	2	0
New ,, Aug. 23rd, 1892	<u>58</u>	<u>0</u>	<u>6</u>
Loss in 1 year 6 months	<u>3</u>	<u>1</u>	<u>6</u>

The above measurements refer to three classes of rocks:—
 (a) Those at Sewerby to a chalk cliff capped with gravel.
 (b) Those at Sands Cottage to Boulder Clay overlaid with gravel and lacustrine marl. (c) That at Hilderthorpe to cross-bedded sands and laminated clay. The rate of denudation naturally increases from (a) to (c). At (a) Sewerby the result gives a loss of about 2 ft. and $1\frac{1}{4}$ ft. per annum at the two stations respectively. At (b) Sands Cottage, of about $3\frac{1}{2}$ ft. and $1\frac{1}{2}$ ft. per annum, or a mean of $2\frac{1}{2}$ ft. per annum. At (c) Hilderthorpe, a loss of 7 ft. per annum. Hence the cliffs immediately to the south of Bridlington Harbour are wearing away some three times faster than those to the north.

JUNE 9TH, 1892.—SEWERBY.

A new station has been selected at Sewerby. Length of hedge, from hedge of ring plantation to the cliff top, at the east side of the first field east of Sands Road, 511 ft. 5 in.

AUGUST 5TH, 1892.—EASINGTON.

At Easington, near Spurn Point, a road runs to the coast; a wooden boat-shed has been erected, which, however, is not destined to remain many years. Distance from S.E. corner of boat-shed (parallel to south side), to edge of cliff, 101 feet 3 inches.

AUGUST 5TH, 1892.—KILNSEA.

At Kilnsea there are fortunately some former measurements, independently of the well-known data concerning Kilnsea church, the chancel of which went in 1826, and the nave in 1833, and the remains of whose tower are still visible, at the lowest spring ebbs, at a distance of some 240 yards from the present cliff of boulder clay.

On a stone inserted in the wall of the Blue Bell Inn, it is recorded that the distance from the sea, i.e., the cliff top, was in 1847, 534 yards.

On the above date (1892), the distance was found to be 341 yards, showing an average loss of over four yards per annum, which has been apparently the average loss for the last sixty years.

There are some cottages near the Blue Bell Inn, on one of which is a similar stone recording a distance of 476 yards from the cliff top in 1858. In 1892 the distance was found to be $343\frac{1}{2}$ yards, which also gives an average of about four yards per annum. Hence the coast of Holderness at its southern extremity is being eroded faster than anywhere else.

The foregoing remarks refer solely to the rate of erosion which the Committee has to determine. As to the 'artificial abstraction of

shingle' and the construction of groins, I can offer my individual opinion only, but I do it the more readily as it may call forth some expression of support or the contrary.

As a rule gravel on all coasts is always travelling, and never remains long in a place unless stopped artificially. Hence groins are most useful, but they must be continuous, and not too far apart. If groins cease, the shore to the south of them (on the coast of Holderness) suffers more than ever, because the ordinary supply of gravel is cut off. The artificial abstraction of gravel is scarcely worth naming. A single on-shore gale will remove as much in a day as all the carts in six months. The main difficulty is to prevent the destruction of the boulder clay cliffs from the percolation of rain-water and from frost. Unless this can be done the groins will find themselves some day out at sea.

ERRATUM.—It has been pointed out to me by Mr. G. Silabon, of Hull, that in my last report I imply that Polson himself measured the distance of certain churches in Holderness from the edge of the cliff. This is partly an error of punctuation. The passage referred to ('Naturalist,' p. 104, 1892) should read, 'Polson, when writing his valuable history of Holderness, recorded the distance of certain churches from the edge of the cliff in 1786. It is to be presumed that the measurements were made, etc.'

NOTES AND NEWS.

Messrs. L. Reeve & Co. have in preparation a new work on the British Aculeate Hymenoptera, from the pen of Mr. Edward Saunders, F.L.S., uniform with the same author's work on the Hemiptera Heteroptera, just completed.

The energetic Berwick algologist, Mr. E. A. L. Batters, B.A., LL.B., F.L.S., has in the 'Journal of Botany' for June 1892 a paper entitled "Additional Notes on the Marine Algæ of the Clyde Sea-area," extending to eight pages, and including notices of numerous species.

Mr. J. Cosmo Melvill, whose scientific activity and critical acumen are by no means confined to any single branch of natural history, has a paper on 'Strathearn Hieracia' in the August 1892 'Journal of Botany,' giving stations for very numerous forms of this difficult genus.

The 'Annotated List of British Tachinidæ,' another of the useful papers on Diptera which have occupied the attention of Mr. R. H. Meade, of Bradford, has now been finished, the last instalment (published in the 'Entomologist's Monthly Magazine' for October 1892) including (at p. 262) a corrected analytical table of the last fourteen genera.

We have received Part VII. of the Transactions of the Leeds Geological Association for the Session 1891-92. The volume gives evidence of a good year's work, and contains abstracts of several valuable and interesting papers. A new feature, and one which will be appreciated by the members, is the List of Books in the Association's library, given on pp. 73 and 74. There is a singularly beautiful frontispiece in the shape of a photographic reprint of a *Sigillaria* found recently in a Ganister quarry at Meanwood, near Leeds.

THE FACULTY OF FOOD-FINDING IN GASTROPODS.

H. WALLIS KEW,

London.

SLUGS, snails, whelks, etc., as is well known, possess a wonderful food-finding faculty. By some means or other they are certainly able to detect the presence of substances of which they are fond at some little distance. So remarkable indeed is this faculty that the creatures have even been credited, on that account, with the probable possession of some mysterious special sense in no way analogous to any of our senses. Thus Knapp, in 1829, wrote in his celebrated 'Journal of a Naturalist':—

No creature seems less qualified to commit the depredations which it does than the garden snail. We grieve to see our fruit mangled and disfigured by these creatures, but cannot readily comprehend by what means they obtain the knowledge that its maturity is approaching; though we find that they must be endowed with some faculty capable of accomplishing the purpose; for no sooner does a plum, a fig, a nectarine, or other fruit begin to ripen on the wall, and long before any sensible odour can be diffused from it, even before an experienced eye can detect the approach to maturity, than those creatures, the slug and the snail, will advance from their asylums, though remotely situate, and proceed by very direct paths to the object. This cannot probably be by the guidance of any known faculty. . . . If they possess the faculty of smelling, in them it must be a very exquisite sense, beyond any delicacy we can comprehend. Thus, excluding human means of comprehension, which appear inadequate, we more reasonably conclude them to be endowed with intelligences for effecting intentions, of which we have no perception, and which we have no capacity for defining.¹

The Rev. J. G. Wood, in 1864, was inclined to agree in this view, thinking it probable that the creatures were able to direct their course by means of 'some perceptive power of which we ourselves have no consciousness.'² This, of course, is quite possible; for among the lower animals, as Sir J. Lubbock has observed, there may be many senses quite different from ours; and, consequently, the familiar world which surrounds us may be a totally different place to such animals, and may be full of sensations which we are unable to conceive.³ Very little I suppose is really known about the senses of gastropods, so that we cannot speak with any degree of certainty as to the manner in which the creatures are affected by external influences. What is known of their food-finding faculty, however, hardly justifies us,

¹ [J. L. Knapp], 'Journal of a Naturalist,' 1829, pp. 327-8.

² J. G. Wood, 'Our Garden Friends and Foes,' 1864, p. 122.

³ Sir J. Lubbock, 'Senses, Instincts, and Intelligence of Animals,' 1888, p. 192.

I think, in assuming that they possess an additional sense for this purpose. The powers of sight with which they are usually accredited, it is true, cannot avail them much; for, though doubtless able to distinguish different degrees of light,¹ it is doubtful whether they possess the power of vision as we understand it, and almost certainly they are incapable of distinguishing objects at a distance. But in all probability, as most will agree, the creatures find their food by means of the sense of smell, or by a distinctly analogous sense. Knapp, we have just seen, excluded this sense on the ground that in order to explain observed facts it would have to be 'a very exquisite sense, beyond any delicacy we can comprehend;' but as Dr. Sochaczewer has observed, we must not compare the senses of invertebrates too critically with those of vertebrates;² we, Darwin held, inherit the power of smell in an enfeebled condition,³ and consequently find a difficulty in comprehending its great delicacy in many other vertebrates, and it is scarcely surprising, therefore, that difficulties should arise when we come to consider the sense in animals as far removed as the gastropoda. Unfortunately, however, as far as I am aware, no organ can be pointed out as the undoubted seat of the sense in these animals. Generally speaking, the osphradium (Spengel's olfactory organ) is said to be persistent in position and nerve-supply throughout the mollusca; but it does not appear to have been described in *Helix* and *Limax*.⁴ In those molluscs, the sense has been variously thought to reside in the tentacles, the organ of Semper, and the pedal gland. Cuvier, from the nature of the skin, thought that a special organ might not be necessary; and Simroth, more recently, has concluded that the olfactory sense is distributed over the whole skin, but more specialized in the tentacles, and especially in the orifice of the pulmonary organ.⁵ The possession of the sense by gastropods, wherever it may reside, can hardly be doubted. Facts of the kind given below have generally been regarded by authors as evidence of its existence; and it is perhaps worth mentioning, as showing apparently that the creatures are able to perceive odoriferous substances at a distance, that, according to a writer in the 'Gardeners' Chronicle' in 1872, carbolic acid, diluted with water and sprinkled on the ground, will *attract* and kill large numbers of

¹ Sir J. Lubbock, loc. cit., p. 140.

² D. Sochaczewer, as quoted in J. R. Micr. Soc., (2), i., 24-5.

³ Descent of Man, ed. 2, p. 18.

⁴ E. R. Lankester, Art. 'Mollusca,' Encyc. Brit., ed. 9, xvi. (1883), 636, 660.

⁵ Cuvier, quoted in Loudon's 'Mag. Nat. Hist.,' iv. (1831), 530; Simroth, quoted in 'Zoological Record,' 1876, Moll., p. 6; 1881, Moll., p. 14; 1882, Moll., p. 16; 1883, Moll., p. 16.

slugs;¹ and further, that M. Commandeur, who had been experimenting with starch and iodine, and had left a jar containing the mixture in his garden, found, after three weeks, that dozens of slugs and snails had congregated in the jar from all parts of the garden; and, attracted it is supposed by the smell of the iodine, the creatures continued to travel to it all the summer long.²

As Woodward remarked in 1851, slugs are 'attracted by fungi or any odorous substances.'³ Mr. Edward Step tells me that he once saw, on a hedge-bank bordering Epsom Common, four great grey slugs (*Limax maximus*) bearing down, full-sail, from as many directions, upon a red amanita, *Agaricus (Amanita) rubescens*. Many fungi, it has recently been remarked, possess an indescribable damp cellar or fungus smell 'such as slugs delight in.'⁴

Slugs sometimes, perhaps rarely, enter bee-hives, apparently for the sake of the honey.⁵ They constantly seek out the 'sugar' (generally a mixture of treacle and rum) which is commonly spread on tree-trunks for the purpose of attracting nocturnal Lepidoptera.⁶ Most Lepidopterists, I suppose, are familiar with the visits of the animals; sometimes they assemble even plentifully, and Mr. Porritt, who has been good enough to watch them carefully, tells me that they sip the bait with great relish. No doubt, like the Lepidoptera, they are attracted to it by scent. The Rev. J. G. Wood, in 1863, mentioned that when engaged in 'sugaring' he had often been surprised at the number of great grey slugs which came crawling down the trunks of the trees; and not having yet assented to Knapp's belief in a special sense, he added that they were 'attracted apparently by the scent of the sweet mixture, and induced by its odour to leave the hiding-places in which they had been cunningly ensconced during the day-time.'⁷ In Churchyard-bottom Wood, Highgate, I have often seen an unusual number of slime-trails about sugar-stains on the bark of the trees.

¹ J. M. Hayward, 'Gardeners' Chronicle,' 1872, p. 1327.

² 'Gardeners' Chronicle,' 1861, p. 216, quoting a communication published in the 'Revue Horticole'; and see also 'Gardeners' Magazine,' v. (1863), 389. I ought to mention, perhaps, that some starch and iodine, which I once exposed in a wood at Highgate, where slugs and snails are plentiful, was not visited by many.

³ S. P. Woodward, 'Manual,' 1851, p. 12.

⁴ C. R. Straton, 'Nature,' xliii. (1850), 9.

⁵ See note, signed E. H. R., referring no doubt to the great grey slug (*Limax maximus*)—'the first time I saw one entering one of my hives I mistook it for the tail end of an adder'—in 'Science Gossip,' 1882, pp. 237, 262.

⁶ See, for instance, 'Wood's Field Naturalists' Handbook,' pp. 20-21; J. E. Harting (on the great grey slug (*Limax maximus*), 'Zoologist,' (3), 11, (1878), 87, and H. H. Higgins (on the tree-slug, *Limax marginatus*), Address to Liverpool Naturalists' Field Club, Jan. 30th, 1891, p. 23.

⁷ J. G. Wood, 'Illustrated Natural History,' ii. (1863), 407

In the same wood, also, I have repeatedly seen slugs about excrement, which they doubtless find in a similar manner; and on which some kinds, especially the variously coloured 'black slug' (*Arion ater*) and the great grey slug (*Limax maximus*), are very fond of feeding. On one occasion six individuals of *Arion ater* were seen feeding together at the same spot. According to Major Becher, slugs are always to be seen, in damp weather, at excrement on the road-sides in the Maltese Islands.¹

The yellow slug (*Limax flavus*), Mr. W. A. Gain has shown, is very fond of cream, and readily finds it out; so that milk standing for cream in cellars or dairies frequented by the slug has to be well protected.² As noted by Dr. Binney, this slug makes its presence disagreeable in cellars also 'by insinuating itself into vessels containing meal and flour.'³ An observer who on one occasion put down some oatmeal and mashed potatoes, with which strychnine was mixed, for the purpose of poisoning mice, states that every time he looked at the mixture after the first morning 'it was covered with slugs,' which, in three days, ate every vestige of it.⁴ A remarkable assemblage of slugs *and snails* about some hen-coops, the food-pans of which contained barley-meal, was described in 'Science Gossip' in 1867. The exceptionally favourable state of the weather on the evening in question, which had followed an unfavourable period, probably helps to account for the very large numbers stated to have been seen; but that the animals were attracted by the barley-meal, as suggested by the observer, can hardly be doubted:—

On the 11th of May of the present year [1867], I was witness, with seven other members of my family, to an extraordinary concourse of snails. . . . A light accidentally held down to some hencoops in a yard adjoining the house, about ten o'clock on Saturday, the 11th of May, revealed a most extraordinary and disgusting sight. Snails, with and without shells,—chiefly the long black snail—were climbing up the bars of the coops, filling the food-pans and blackening the ground. The whole family was called out to witness it, and it was soon found that an army of these slimy creatures was advancing from the kitchen garden, the entrance to which was about ten yards distant from the coops. A further search showed that some other hen-coops at the top of the flower garden were similarly but not quite so abundantly infested. The day had been showery, and it followed one of frequent thunderstorms and great rain and hail. These storms followed, as your readers may remember, on some excessively hot weather quite unusual at that time of the year. I cannot well give an idea of the number of slugs and snails; some of those who saw them said there must have been thousands. Salt was profusely applied, and the dead bodies were shovelled up next morning. Were these creatures attracted by the barley-meal? What sense led them to the coops?⁵ . . .

¹ E. F. Becher, 'Journ. of Conch.', iv. (1884), 232.

² W. A. Gain, 'Naturalist,' 1889, p. 55.

³ A. Binney, 'Terrestrial Air-breathing Mollusks of the United States,' ii. (1851), 36.

⁴ J. S., 'Gardeners' Chronicle,' 1874, p. 343.

⁵ L., An Invading Army of Snails, 'Science Gossip,' 1867, p. 215.

Fresh-water snails, also, sometimes congregate in good numbers round substances of which they are particularly fond. I remember having seen common pond-snails (*Limnæa peregra*) clustering upon fish-heads, etc., which had been thrown into a dirty little stream near Louth;¹ and a large gathering of *Limnæa stagnalis* which had come together to feed on an old newspaper in a pond on Chislehurst Common, 'so that for the space of about a square foot nothing else could be seen,' was described a few years ago in 'Science Gossip.'²

That slugs—those which feed much upon phænogamous plants at least³—are able in a surprising manner to seek out the particular plants of which they are specially fond is but too well known, and the same remark applies, though perhaps in a less degree, to many snails.⁴ While some plants remain quite untouched, it is often found to be nearly impossible to grow others unless the strictest precautions are taken. Thus, a writer in the 'Garden' in 1884, dealing with the cultivation of alpine plants, remarks that while he had never seen a slug eating or even on a plant of *Ramondia pyrenaica* and gentians were never much attacked, the creatures on the other hand were always 'voraciously set' on *Aster alpinus*, about the most vigorous of all the plants of a genuine alpine character. The next most difficult plant in his collection to keep from slugs was *Phlox divaricata*; and some of the delicate Campanulas, he added, such as *Campanula zoysi*, it was next to impossible to keep.⁵ The foreman of the Herbaceous Ground in the Royal Gardens, Kew, as Mr. J. Burtt Davy informed me in 1891, found it almost impossible to grow *Mutisia decurrens* (a Chilean composite which climbs by means of tendrils) because it was so eagerly devoured by the slugs, which do not as a rule give much trouble in the gardens. One plant had been grown by the wall of Museum No. 1, and had flowered well, but it had been protected by a thick layer of cinders all round the roots. *Farfugium grande* is another food-plant which

¹ 'Naturalists' World,' iii. (1886), 62.

² T. D. A. Cockerell, 'Science Gossip,' xxi. (1885), 211. Bivalves, which have been known to assemble in a similar manner, have been credited with the power of detecting food at a distance. The skull of a fox, placed in a ditch to soak (the observer intended to clean it), was found, after four days, to be literally covered with little pea-shells (*Pisidium pusillum*); upwards of forty were counted, and the number on the whole skull 'could not have been far short of two hundred.' Unless the creatures were absolutely swarming in the ditch, the observer remarked, 'some must have come from a distance to enjoy the treat.' (R. L. King, '*Pisidium pusillum* attracted by the skull of a fox,' 'Zoologist,' iv. (1846), 1266.)

³ All the slugs of this country belonging to the genera *Arion*, *Amalia*, and *Agriolimax*, I believe, feed largely on the leaves of phænogams, and are to a great extent omnivorous; those of the remaining genus (*Limax*), however, subsist more generally on lichens, fungi, etc. The tree-slug (*Limax marginatus*), as shown by experiments carried out by Mr. Gain, is the most dainty of our slugs, and probably never touches leaves.

⁴ See G. Johnston, Loudon's 'Mag. Nat. Hist.,' iv. (1831), 530.

⁵ J. C. L., 'Garden,' xxv. (1884), 206.

apparently possesses great attractive powers. Some years ago in greenhouses in Germany, Mr. G. K. Gude observed that it was constantly attacked, the young leaves and shoots being always eaten in preference to all other plants growing in the houses, which latter, consequently, escaped undamaged. In other houses, however, where no *Farfugiums* were kept, the slugs nibbled indiscriminately at many kinds. Beds of crisp lettuce and cabbage and rows of winter celery are resorted to by great numbers of slugs,¹ and dahlias when first planted out are notoriously liable to their attacks, being often pounced upon, if left unprotected, and completely destroyed during the first night.² Slugs are very fond, also, of the flowers of orchids, so that certain kinds have always to be carefully safeguarded against their attacks, and from observations made by Mr. T. Baines, a well known and experienced gardener,³ it certainly seems clear that the creatures are able to detect the presence of the flowers at some little distance:—

I have often observed that a slug will travel over the surface of a pot in which is growing a *Dendrobium nobile*, a *Cattleya*, *Vanda*, or similar upright plant, for a score of times without ever attempting to ascend into the head of the plant—unless it is in bloom, in which case they are certain to find their way straight to the flowers; after which they will descend, and return to some favourite hiding-place, often at the opposite end of the house, returning regularly every night to feed on the dainty dish, unless measures are taken to cut short their career.⁴

Observations of a surprising character have been made also by Mr. Robert Warner, F.L.S. When no other way to the orchids is open to the creatures, as he stated in 1880, 'they crawl up some plant or rafter, and by means of a glutinous matter which they exude from their tails they let themselves down to the spikes.'⁵ In 1889 the observer assured me that he had actually seen many little slugs suspending themselves by slime-threads from the rafters, and 'descending on the spikes' of the beautiful *Odontoglossum alexandrae*; and thus many spikes, thickly wadded round with cotton-wool (which the slugs could not travel over) and growing in pots surrounded with water, had been lost. It can hardly be supposed, I think, that the slugs, having tried to approach the flowers in the ordinary manner by crawling over the pots and stems and finding themselves intercepted by moats of water or collars of cotton-wool, would deliberately ascend the rafters for the purpose of lowering themselves to the spikes. This would certainly require

¹ T. Baines, 'Garden,' v. (1874), 201-2.

² Shirley Hibberd, 'The Amateur's Flower-garden,' 1884, p. 285.

³ For memoir and portrait of Baines, see 'Gardeners' Chronicle,' (n.s.), iii. (1875), 180.

⁴ T. Baines, 'Garden,' v. (1874), 201-2.

⁵ R. Warner, 'Gardeners' Chronicle,' (n.s.), xiv. (1880), 405; (n.s.), xvi. (1881), 722.

greater mental activity than can be reasonably looked for in the Gastropoda. We can well imagine, however, that, having once detected the presence of the flowers, the creatures would instinctively endeavour to reach them, and observers familiar with the use of slime-threads by slugs will understand that individuals happening to crawl along the rafters until immediately above the spikes would be likely, in reaching out towards them, to relinquish their hold and become suspended upon threads which would be gradually lengthened until the spikes were reached.

Some of the plants thus specially liable to be sought out and eaten are effectually protected, it is significant to note, by the presence of other plants or substances the attractive powers of which are still greater. This fact is well known to gardeners, etc., who commonly practise a system of 'counter-feeding.' Thus, Mr. Gude observed that plants of *Farfugium grande* escaped when small heaps of buckwheat-meal were placed near them. Crops of young carrots in frames and rows of dahlias in the open, it is stated, escape when young and tender lettuce-plants are thrown down near: for when slugs can get lettuces 'they invariably leave everything else.'¹ So great is the benefit derived in this way that it is even found worth while to plant lettuces amongst 'choice things' which are usually much attacked.² When about to plant out a bed of dahlias, as a well-known gardening author states, it is advisable to plant the whole piece with lettuces first; and, he adds, 'as long as the lettuce lasts the snails and slugs will not touch a dahlia.'³ A writer in the 'Gardeners' Chronicle,' many years ago, stated that in a very bad slug season he once covered a fifteen-acre wheat field thickly with turnip leaves in order to protect the crop, and found after a fortnight the slugs had eaten up all the leaves without having touched the wheat.⁴ If this precaution had not been taken much damage would almost certainly have been done. As stated in 1846, many fields of oats, etc., were completely destroyed by slugs in that year and had to be ploughed down and re-sown with tares or barley.⁵ A farmer at Harmondsworth, in 1842, is said to have had cart-loads of turnip-leaves scattered over his wheat land, and forty women employed to shake the slugs from the leaves in the mornings took no less than twenty bushels of them upon forty-two acres in three weeks.⁶

¹ J. C. C., 'Garden,' xxv. (1884), 327.

² 'Gardeners' Magazine,' xvii. (1874), 35; and see also xxix. (1886), 297, and 'Garden,' vii. (1875), 464.

³ Shirley Hibberd, 'The Amateur's Flower Garden,' 1884, p. 285.

⁴ J. Trimmer, 'Gardeners' Chronicle,' 1844, p. 44.

⁵ T. J. Bold, 'Zoologist,' iv. (1846), 1503-4.

⁶ 'Gardeners' Chronicle,' 1842, p. 56, quoting the 'Merthyr Guardian.'

It is interesting to notice, also, that gardeners, who are generally much better acquainted with the wonderful food-finding faculty possessed by slugs and snails than are most malacologists, regularly put down favourite food-substances in order to cause the creatures to assemble in given spots so that they may be readily collected and destroyed. Cabbage- lettuce- and turnip-leaves, pea-haulm, orange-peel, sliced apples, beet-root, potatoes, carrots, turnips, swedes, or wurtzels, brewers' grains, bran, bran soaked in greasy pot-liquor, stale bread or bran soaked in beer, oat- barley- and buckwheat-meal, dead slugs, bits of fat meat, milk, strong smelling stale beer, or beer mixed with vinegar, beer or porter sweetened with sugar, lard or rank butter spread over pieces of board or tile, etc., are among the various 'baits' recommended by gardeners. Cabbage leaves thus used are sometimes warmed and greased,¹ or, as stated by Loudon, they may be rubbed over with the bruised bodies of recently killed slugs.² The creatures are found to assemble, often in large numbers, round some or all of these substances, so that in the opinion of many gardeners or gardening authors the putting down of such baits and the collection of the 'vermin' therefrom by lantern-light at night-time is one of the best ways of keeping the numbers of the animals within bounds. In Nicholson's 'Dictionary of Gardening,' for instance, we find the use of baits recommended as one of the most effectual remedies which can be directed against the ravages of these pests.³ This could hardly be the case, I think, unless the creatures were able to detect the presence of their food at least at some little distance. The promptitude with which the crushed body of a slug is generally found and preyed upon by two or three of its fellows has often been remarked upon.⁴ Pea-haulm, as Loudon remarked, 'forms a powerful attraction';⁵ and the strong smelling rind of an orange, according to another writer, is a great temptation; as many as six slugs having been caught on one piece at a time.⁶ One gardener, who used slices of swede turnip as a bait, stated in 1850 that he had thus secured no less than 9,096 slugs and snails, in ten days, on about a quarter of an acre of garden ground; the second morning's collection alone yielding 2,056.⁷ By baiting with cabbage

¹ See for instance Tate's 'Land and Freshwater Mollusks,' 1866, p. 76.

² J. C. Loudon, 'Suburban Horticulturist,' 1845, p. 98.

³ 'Dictionary of Gardening,' edited by G. Nicholson, A.L.S., iii. (1887), 142.

⁴ And see for instance, 'Garden,' xxix. (1886), 593.

⁵ 'Suburban Horticulturist,' p. 86; and see also, as to the use of this bait, J. Wilmot, Trans. Hort. Soc., ii. (1822), 22-4; and R. Gilbert, 'Garden,' xvi. (1879), 445.

⁶ F. Dobner, 'Gardeners' Chronicle,' 2nd April, 1887; and see also, as to the attractive powers of orange-peel, 'Garden,' xvii. (1880), 498, and xxiii. (1883), 214.

⁷ T. Colley, 'Gardeners' Chronicle,' 1850, p. 261.

leaves 1,700 slugs are said to have been taken in two days.¹ One writer who had these leaves strewed over a crop of young parsnips, about twenty-five poles, stated in 1846 that upwards of 4,000 slugs were picked from the leaves in three mornings;² and another who used a similar bait (savoy leaves) says that he destroyed 36,423 slugs at the leaves (besides 2,000 more killed incidentally) between 7th October, 1841, and 20th May, 1842.³ Bran is much in favour as a bait. As an observer remarked in 1880, slugs seem to 'scent it from afar and troop to it'; he had seen from twenty to thirty assembled round quite a small heap;⁴ and previously another observer had remarked that it seemed to attract the creatures from all quarters, so that small quantities put down as baits became covered with them, 'often a complete mass.'⁵ Brewers' grains, perhaps, are even more attractive. As stated in 1878, slugs will come to a handful of grains 'from all directions,' fifteen or twenty individuals being sometimes seen together at a small bait of it.⁶ Subsequently, another writer remarked that a small quantity under a bit of slate or board 'is an irresistible attraction,' and the slugs he thought 'must smell it from a considerable distance, for I have sometimes caught nearly a hundred in one place.' His gardener had kept an account of the number thus trapped during the season, which, in May, had amounted to about 13,000.⁷ In 1889, the creatures' liking for grains, and in fact for anything soaked in beer, was again remarked upon; and, as is added, they 'will travel a considerable distance to get it.'⁸ Beer or porter sweetened with moist sugar is said to be 'an effectual trap;' and when exposed in gardens in small vessels about two inches deep, many slugs and snails, it is stated, drown themselves in it.⁹ A six-inch flower saucer, half-filled with skim-milk and filled up with water when the milk turned sour, left on the ground on one occasion for four days, was found to contain more than 250 slugs, from a quarter of an inch to two inches in length, all dead.¹⁰ It has been suggested, among others by Mr. C. T. Musson, that collectors might resort to similar

¹ Daniel Harris, 'Garden,' xxii. (1882), 410.

² J. R., 'Gardeners' Chronicle,' 1846, p. 451.

³ Estus, 'Gardeners' Chronicle,' 1842, p. 653.

⁴ E. Jackson, 'Garden' (1880), xvii, 34-5.

⁵ J. Huie, 'Garden,' iv. (1873), 244.

⁶ J. Garland, 'Garden,' xiii. (1878), 304.

⁷ G. H. W., 'Gardeners' Chronicle,' xiii. (1880), 598; and see also xv. (1881), 339.

⁸ J., 'Journ. of Hort.,' (3), xviii. (1889), 459.

⁹ J. S. Kenway, 'Gardeners' Chronicle,' 1847, p. 269.

¹⁰ T. C. Roath, 'Garden,' xxii. (1828), 278.

means for taking shells, using meat, greased sheets of paper, boards, etc., as baits. Dr. Sterki has suggested that those who collect small shells (the small *Hyalinias*, *Pupas*, etc.) might usefully expose heads of sheep or other bones with open cavities as baits.¹ Mr. Drummond, who was the first or one of the first to find *Stenogyra goodallii* in this country, used to obtain supplies of it from its original habitat by placing a few dead worms under a board on the surface of the tan of a pine-bed, and in this way numbers were induced to come together.²

Marine gastropods, too, whelks, etc., often assemble in numbers round favourite food. As with slugs and snails the extreme delicacy of their sense of smell apparently enables them to proceed towards it from all directions. As stated in Tryon's Manual, the dog-whelks (*Nassa*) and sea-snails (*Natica*) are able to perceive the presence of a decaying animal in the water from a great distance.³ This faculty in the common whelk (*Buccinum undatum*) is taken advantage of by fishermen who commonly take vast quantities, both for the cod-fisheries and for human food, at baits or in baited traps.⁴ According to Ersted, great numbers of this mollusc and of the almond-whelk (*Fusus antiquus*) are taken in the Kattegat in wicker baskets baited with dead cod-fish. The baskets are let down on a muddy bottom and are soon taken up half-filled with whelks.⁵ On our own coasts various kinds of baited nets and baskets are similarly employed. The Grimsby whelk-fishermen, for instance, sink shallow hoop-nets baited with fish-offal, in which, as Mr. Holdsworth states, 'the whelks collect in large numbers, and are caught without any difficulty.' Another mode is to sink baskets, baited with pieces of fish, having a net stretched over the end with an opening in the centre for the admission of the whelks.⁶ Horse-flesh, also, is often used as a bait.⁷ About Harwich trots or long-lines are employed, and when hauled up the snoods which are baited with shore-crabs, about twenty on each, are found covered with whelks.⁸ These and other carnivorous molluscs are often taken in good numbers on long-lines baited for catching fish. Such lines, according to

¹ V. Sterki, 'Conchologists' Exchange,' i. (1887), 67.

² See Fleming's 'British Animals,' 1828, p. 266.

³ G. W. Tryon, jun., 'Manual of Conchology,' ii. (1880), 118.

⁴ A good many whelks obtained for these purposes are dredged.

⁵ Ersted, quoted by Jeffreys, 'British Conchology,' iv. (1867), 289-290.

⁶ E. W. H. Holdsworth, 'Deep-Sea Fishing,' 1874, p. 143.

⁷ J. C. Wilcocks, 'The Sea-fisherman,' ed. 3, 1875, p. 215.

⁸ E. W. H. Holdsworth, loc. cit., p. 142.

Woodward, are laid out at night near the coast and taken up next morning, or when used out at sea boats lay by for a few hours, and then take them up. Sometimes a bushel of whelks are found adhering to the baits of a single line. Some of the scarce *Fusi*, etc., have been obtained in this way.¹ Jeffreys mentions having received much assistance in the Shetlands from the long-line fishermen, who regularly brought to him all the whelks (or 'buckies') which were caught sticking to the bait on the deep-sea (or 'haaf') fishing-banks.² It is interesting to note also that these creatures, *Buccinum*, *Nassa*, *Natica*, etc., often find their way into lobster-pots which are baited with fish or other animal matter.³ No doubt they are attracted, as Tryon states (of *Nassa*), by the smell of the bait.⁴ At Bognor, Sussex, as Mr. D'Urban informed Woodward, *Natica alderi* and *Natica catena* are frequently found in the lobster-pots, 'which they enter to feed upon the bait.'⁵ At St. Margaret's-at-Cliffe, on the Kentish coast, as mentioned in Lovell's 'Edible Mollusca,' many of the lobster-pots when drawn up are found to be baitless and full of whelks.⁶ Many other marine gastropods, doubtless, are taken at baits in various parts of the world. The 'purple-fish' of the ancients, as mentioned by Aristotle, was allured by putrid substances, and approached a bait of that kind 'as having a sensible perception of it at a distance.'⁷ In Mauritius ground-lines baited with pieces of the arms of cuttle-fish are, or were at one time, laid down in deep water for the purpose of attracting olives, etc. As Mr. Broderip wrote in 1825, 'it is the amusement of the place to watch over the trim apparatus of lines hung over some sand-bank to tempt the various brilliant species of *Oliva* which there abound, or to wait for the more rare approach of the harp-shell, till the rich hues of its inhabitant are seen glowing through the clear blue waters in the rays of a tropical rising sun.'⁸

The results in many of the above cases, some will perhaps be inclined to argue, are likely to be largely accidental. Many individuals, of course, both of terrestrial and aquatic gastropods, even supposing them to be quite incapable of scenting or detecting their

¹ Woodward's 'Manual,' ed. 4, rep. 1890, p. 140, and see W. C. Hey, 'Naturalist,' x. (1885), p. 132-3.

² 'British Conchology,' i. (1862), lxxv., and see also p. xxxi.

³ G. J[ohnston], Loudon's 'Mag. Nat. Hist.,' vii. (1834), 408; 'British Conchology,' i. (1862), lix.; Wilcocks' 'Sea-fisherman,' ed. 3, 1875, p. 215.

⁴ Tryon's 'Manual,' iv. (1832), 18.

⁵ Woodward's 'Manual,' ed. 4, rep. 1890, p. 140.

⁶ M. S. Lovell, 'Edible Mollusca,' ed. 2, 1884, p. 193.

⁷ Taylor's 'Aristotle,' vi. p. 135.

⁸ W. J. Broderip, 'Zoological Journal,' ii. (1825), 199.

food at a distance, would be certain in many cases to find baits, and other favourite food-substances, during their wanderings by mere accident; for in gardens and elsewhere slugs and snails often exist in immense numbers, and on favourable nights we see them crawling about in all directions; whelks, etc., in like manner are probably very numerous on certain parts of the sea-bottom. Moreover, as Mr. Gain suggests, slugs and snails on going out to feed are often likely to devour the first suitable food they find, and to retire in the morning to the nearest refuge; from which, in such case, they would again start for a foray on the following night. Thus they would remain in the vicinity of food when once found; and individuals from various starting-points, of course, would be likely to come across the same food; so that we can readily understand that a bait, for instance, exposed during several days in the same place, might become surrounded by quite a number of molluscs, all of which might have found it accidentally in the first instance. A similar consideration applies, probably, in the case of marine gastropods. Slugs, it might be remarked, congregate for shelter, often in considerable numbers, under pieces of board or tile placed on the ground as traps in gardens,¹ and, similarly, snails collect in numbers in empty flower-pots. These traps, certainly, are accidentally found. It is worth mentioning, however, in this connection, that when Mr. Gain placed side by side, on bare ground in his garden, a tile affording shelter only, and another with orange-peel beneath it as a bait, only seven slugs (six garden-slugs, *Arion hortensis*, and one *Arion circumscriptus*) were taken under the former in three days, while the latter, during the same period, yielded seventeen (fourteen garden-slugs, one *Arion circumscriptus*, and two field-slugs, *Agriolimax agrestis*). This experiment, as far as it goes, seems to show that the bait was scented, and it cannot reasonably be doubted, I think, but that gastropods are able to scent or in some way perceive their food at least at a little distance. Otherwise, as it seems to me, and as already indicated, some of the facts above alluded to would have to be regarded as well-nigh inexplicable. It would be difficult, for instance, to account for the fact recorded by Mr. Baines; and his observations were made, it will be remembered, in orchid-houses where slugs do not commonly exist in vast numbers. Bee-hives, I suppose, are hardly likely to be entered by slugs accidentally. As Mr. Nunneley remarked in 1834, slugs are soon attracted in numbers to favourite food 'even when placed at some distance from their accustomed haunts';² and

¹ See 'Garden,' v. (1874), 201-2; viii. (1875), 306; and 'Gardeners' Magazine,' xviii. (1875), 114.

² T. Nunneley, Trans. Leeds Philos. and Lit. Soc., i., p. 74.

Mr. Baines found that the creatures seldom allowed many nights to pass before discovering tallow which he put down in places 'where they were least likely to find it.'¹ A fact recorded by Jeffreys of *Fusus antiquus* seems to afford conclusive proof that that animal possesses the faculty of perceiving its food at a distance, for it is said to assemble in large numbers around a bait which is completely hidden and inaccessible :

Quantities of the common 'almond-whelk' of dealers in shell-fish (*Fusus antiquus*) are procured on the Cheshire coast by the fishermen placing a dead dog on the sands at low-water mark during spring tides. The bait is then completely covered with stones, which are piled up like a cairn, partly to prevent the carcase being carried away by the tide, and also because the fishermen have a scruple about eating shell-fish which have been fed on much carrion. On the next turn of the tide the heap of stones is visited and the whelks are found on the surface in great numbers, having been apparently attracted by the smell of the bait, but unable to get at it.²

Observations which have been made on various gastropods in captivity are sufficient alone, I think, to establish the fact that a faculty of the kind indicated is possessed by them. Swammerdam, in moving a little fresh food towards the snails which he kept for a considerable time in his chamber, found that they 'immediately perceived it by the scent, and crept out of their little shells and came to it.'³ Mr. James Hardy, in 1845, mentioned having seen a black slug, which he had placed in a jug, crawl forward 'in a direct line to some raw beef ;'⁴ and I have seen various kinds of slugs—kept from time to time in glass-jars—approach their food in this manner. It is even said to have been shown, I believe by Moquin-Tandon, that slugs and snails—frequently seen to 'proceed in a direct line towards substances of which they are fond'—will stop or change their direction if the substances are removed or put in a different place.⁵ That the creatures often find food in captivity almost immediately after it is placed in the vessel in which they are kept, and much more quickly than could be the case if they found it accidentally, has several times been remarked upon. I have often noticed this in slugs.⁶ Miss Hele, who has kept many kinds of

¹ T. Baines, 'Garden,' v. (1874), 201-2.

² 'British Conchology,' i. (1862), xxviii-xxix.

³ Swammerdam, 'Book of Nature,' Flloyd's transl., p. 49.

⁴ James Hardy, 'Zoologist,' iii. (1845), 1036.

⁵ See 'Ann. and Mag. Nat. Hist.' (2), ix. (1852), 155.

⁶ A small piece of bread placed at the bottom of a glass-jar, five inches deep, in which were six marsh-slugs (*Agriolimax levis*), a young *Arion ater*, and a young *Limax maximus*, was found in less than ten minutes by four of the marsh-slugs. The others did not come to it in the half hour during which I kept them under observation. The *Arion* had been disturbed and was sulky. When the bread was put in, one of the marsh-slugs was in the bottom of the jar, another on the side about half-way up, and the rest near the top.

snails, has mentioned that as soon as raw beef or mutton is put into the house in which a colony of *Hyalinia draparnaldi* is living 'a little crowd crawls forth from the moss, etc.,' and, in the course of a few hours, demolishes the supply.¹ And when lettuce is put into the pans in which snails which feed more generally on plants are kept, she tells me, the creatures will always 'forsake cabbage or wild herbage at once and crowd to the lettuce.' Dr. Baudon, who placed a piece of raw mutton of the size of a hazel-nut under a bell-glass in which he kept a large number of glass-shells (*Vitrina pellucida*), observed that in less than five minutes those in the immediate vicinity quitted the leaves on which they were then feeding, and from all quarters they were seen marching on, so that the mutton became a general rendezvous. One which was feeding upon the remains of a cellar-snail (*Hyalinia cellaria*), it is said, 'abandoned its victim to satisfy the craving of a newly acquired taste.'² Mr. W. A. Lloyd, in 1865, mentioned that netted dog-whelks (*Nassa reticulata*) which he kept in a shallow tank usually remained buried in the sand quite out of sight; but if a piece of oyster, mussel, or meat were drawn over the sand, or even if it were touched ever so lightly with the feeding forceps, the points of which smelt of food, the creatures would appear above the surface in a few moments. Sometimes half picked mutton or beef bones were placed in the tanks, and these in a few minutes became completely covered with the molluscs. It was impossible, in fact, to introduce any animal substance, living or dead, into the tank 'without these whelks smelling it, and coming up to see what is to be got.'³

Slugs, etc., it is well known, when they discover favourite food will often return to it many times. The regular return of slugs at night from their hiding-places, 'often at the opposite end of the house,' to feed upon the flowers of orchids has already been referred to. Mr. Sherriff Tye, as he informs me, has observed that in green-houses slugs will return to the same place to feed night after night; a slug or slugs, for instance, which he was never able to catch, and which probably retired to a safe hiding-place behind the greenhouse flue (only used in winter), 'nightly ravaged about the fronds of maiden-hair ferns (*Adiantum cuneatum*), five pots, for four months.' The return of slugs many times to feed on the colouring matter on some book-covers in a London publishing house is clearly indicated

¹ F. M. Hele, 'Science Gossip,' xx. (1884), 115.

² Baudon, 'Cat. des Moll. de l'Oise,' 1862, as quoted by Tate, 'Land and Freshwater Mollusks,' 1866, 101-2.

³ W. A. Lloyd, 'Science Gossip,' 1865, 259-50.

by observations recorded by Mr. E. Step, in 1883. The books were damaged, almost nightly, during a considerable period, and the slugs appear to have proceeded from time to time from secure hiding-places, for, though their slime-trails were often observed over the books and shelves, the animals themselves, which were carefully looked for, were not seen for about twelve months.¹ Mr. Gain has informed me that a yellow slug (*Limax flavus*), as shown by its slime-trails, came nightly at one time to feed upon cream in his cellar, and it must have come upon each occasion from a safe and more or less distant retreat, for most diligent search was made for it without success.² As recently recorded by Mr. Musson, also, a slug of the same kind 'came regularly to a flour bag in which there happened to be a rent,' and, as he added, 'it was only on my going to the bag one night that I found the slug gorging itself on the flour, although its slime-track had been observed fresh at intervals for upwards of a fortnight.'³ No doubt in cases of this kind the creatures are often largely guided by the scent of their food; but the regular return of a slug to food which might possibly have been discovered accidentally, it must be noted, does not in itself necessarily imply that the food is scented; for the creature may possibly rely upon its own trail or scent, or perhaps, wholly or in part, upon memory of direction and locality.⁴ The yellow slug which came nightly to feed upon cream certainly seems to have directed its course more by means of its former trails or by memory than by the scent of the food, for when the basins were removed to a distant part of the cellar it was found in the morning 'wandering disconsolately' in the place where they had formerly stood.

The snail-slugs (*Testacellæ*), which feed chiefly on earthworms, and are said to hunt them underground, are presumably largely guided by scent.

¹ E. Step, 'Science Gossip,' xix. (1883), 163-164.

² These cases have already been quoted, in part, in this Journal; see p. 312 of the volume for 1890. Mr. Step mentions that fresh leaves (those of cabbage and lettuce, as he informs me), laid down from time to time in the hope that the slugs might be attracted to them and caught, remained untouched. It is hardly surprising, however, that such baits should have been ineffectual, for neither the great grey slug (*Limax maximus*) nor the yellow slug (*Limax flavus*), the kinds most likely to occur in a London publishing-house, have much liking for fresh leaves.

³ C. T. Musson, Proc. Lin. Soc. N.S.W., for 1890, (2), v. (1891), 893. Mr. Gosse has mentioned that a Nudibranchiate sea-slug (*Eolis papillosa*), which he kept in a large pan of water along with many kinds of marine animals, and which had attacked a sea-anemone (*Anthea cereus*), soon returned to it on being removed, and on being again removed it 'again returned, though from a considerable distance.' (P. H. Gosse, 'A Naturalist's Rambles on the Devonshire Coast,' 1853, pp. 15-6).

⁴ See as to the probable exercise of memory by gastropods, 'Naturalist,' 1890, pp. 307-318.

NOTES AND NEWS.

Mr. E. A. L. Batters, B.A., LL.B., F.L.S., of Berwick-on-Tweed, describes in the 'Journal of Botany' for March last year, a new marine Alga, to which he gives the name of *Gonimophyllum buffhami*, figuring the details on a plate.



The decease of the Rev. F. O. Morris, B.A., the Rector of Nunburnholme on the 10th of February last, at the ripe age of 83, removed from our midst a noteworthy figure. He was a prolific author on various natural history subjects, and his popular treatises on British Birds, their Nests and Eggs, Butterflies and Moths, ran through numerous editions. At one time he was editor of 'The Naturalist,' the present journal being a lineal successor and retaining the title. His writings in his later lifetime were confined to vigorous attacks upon Darwin and his theory and to various theological and controversial pamphlets. Portraits of him appeared in the 'Graphic' and 'Illustrated London News' soon after the news of his death.



By the death of Dr. B. Carrington, which took place at Brighton, on the 18th January last, British Hepaticology has lost one of its most accomplished authorities. At one time resident at Yeadon, near Leeds, he was joint-author with Prof. Miall of 'A Flora of the West Riding of Yorkshire,' published about 1862, of which he wrote the cryptogamic portion. For many years he had been resident at Eccles, near Manchester, and was president of the Manchester Cryptogamic Society, a body which we fear is now defunct, although it was one of the most useful societies Manchester ever had. Dr. Carrington's great work on British Hepaticæ was still unfinished at the time of his death, but it is hoped that our students of this group will take up and carry on the work in some form or other, as indeed we believe Mr. W. H. Pearson will do.



The Barnsley Naturalists' Society have lost a warm friend and ever faithful supporter by the death of Mr. W. J. Lancaster, on the 6th of February last, at the early age of 55. Although the heavy claims of a busy practice as the leading medical practitioner of the town prevented his devoting time to the active personal investigation of any special branch of Natural History, his interest in botanical and microscopical studies was great and his knowledge considerable, while his unassuming and kindly manner and amiable disposition secured him hosts of friends. He invariably made a point of attending the Barnsley Naturalists' Society's meetings whenever possible, and in 1882 and again in 1884 he was its President. His interest in the Society can be said to have scarcely ceased with life, for under his will the Society received a bequest of £100, together with a valuable microscope and numerous objects.



We have received the 3rd volume of the 'Transactions of the Rochdale Literary and Scientific Society,' for 1891-92. From a typographical point of view the past reflects great credit on the town, as does also the literary and scientific matter it contains. The first paper is by Mr. T. S. Smithson, who treats of *Batrachospermum* and its life-history under the title of 'Bead Moss.' 'Coal Smoke' is discoursed upon by Mr. T. Stenhouse, F.C.S., 'Rochdale Surnames' by Mr. Henry Fishwick, F.S.A., 'The New Star in Auriga' by Archdeacon Wilson, and 'Magic Knots' by Dr. H. C. March, while 'Evolution in the Ornamental Art of Savage People' is the subject of a translation from the Swedish of Dr. Hjalmar Stolpe, which is profusely illustrated. There are a couple of articles in the volume which more directly come under our cognisance, as being more distinctly local scientific research. Mr. J. R. Ashworth treats in detail on the 'Seasonal Variations of Temperature at Spring Mill Reservoir' and Mr. S. S. Platt gives an account of 'Some of the Recent Results of the Investigations into Local Erratic Blocks,' illustrating them by a map showing the position of Local Erratic Blocks. The proceedings and reports, which bring up the rear, show that the Society is in a healthy, active and flourishing condition. Long may it continue so!

In Memoriam.

WILLIAM COLLINGS LUKIS, M.A., F.S.A.

THE death of the Rev. W. C. Lukis, which occurred at his residence, Wath Rectory, near Ripon, on the 7th of December, 1892, removes a familiar name from the ranks of Yorkshire archæologists, and one who will long be remembered with feelings of deep respect and esteem, not only in the county of York, where he lived and worked so long, but also by archæologists throughout the whole of Western Europe. His tall, erect, manly form, and genial countenance were well known for many miles around the ancient city of Ripon, and he was certainly one whose friendship it was a pleasure and a delight to claim. Mr. Lukis was not only an archæologist of great eminence, but he also possessed considerable knowledge of geology, botany, and other branches of natural history. He had long been an observant traveller in various parts of Europe, Africa, etc., more especially in the Netherlands, Denmark, France, Italy, and Algeria; and his writings and researches show that accurate and intimate knowledge of those countries, which he acquired from careful personal investigations. The deceased gentleman was also an artist of considerable power and merit, as many of his works, illustrated by his own hand, sufficiently testify.

He was born on April 8th, 1817, in the Island of Guernsey, and was the third son of Colonel Frederick Corben Lukis, by Elizabeth, youngest daughter of Mr. John Collings, of Guernsey. From his father, who was also an archæologist of some distinction, Mr. Lukis inherited a taste for natural science, which he pursued at Cambridge, under Professors Henslow and Sedgwick, and the writer has frequently heard him dilate on the benefits he derived from his connection with those far-famed scientists. He received his early education in Guernsey, afterwards in France, and at Blackheath, under the mastership of the Rev. Sanderson Tennant, whilst in January 1840, he graduated in honours at Trinity College, Cambridge. Twelve months later he was ordained at Salisbury, by Bishop Denison, and licensed to the curacy of Bradford-on-Avon (of which parish the late Canon Harvey, formerly private tutor to Prince George, now Duke of Cambridge, was then vicar.) In the year 1845 he was appointed chaplain to the Marquis of Ailesbury, who also successively presented to him the livings of Great Bedwyn, Wilts, in 1850; Collingbourne Ducis, Wilts, in 1855; and Wath, near Ripon, in 1861, which latter he held up to the time of his death. At Wath, Mr. Lukis was instrumental in restoring the

old parish church, repairing the rectory, and enlarging the schools. He also filled the office of Rural Dean for eleven years in Wiltshire and six in Yorkshire. Whilst resident at Cambridge, he was one of the earliest members of and contributors to the Camden Society, then newly formed; and when living at Bradford-on-Avon, he published a quarto volume on 'Ancient Church Plate,' and a few years later, two pamphlets on the necessity of looking into the condition of Church Bells, with a view to their preservation, and also the security of Church Towers. In 1855, the deceased gentleman read a paper before the members of the Wilts Archæological Society, which was subsequently published under the title of 'An Account of Church Bells, etc.' He was a frequent contributor to the journals of the Archæological Institute, of the British Archæological Association, and of other kindred societies.

In 1847, he was elected a Fellow of the Royal Society of Northern Antiquaries, Copenhagen; in 1853, a Fellow of the Society of Antiquaries, London; and in 1867, a member of the Société Archéologique de Nantes, at whose meetings he read papers which were printed in the Society's Bulletin. In 1872, he was elected a corresponding member of the Société de Climatologie Algerienne.

In 1875, he published a guide to the barrows and other prehistoric monuments of South Brittany, and contributed numerous reviews of archæological works to the columns of the 'Athenæum,' whilst from time to time he was a practical barrow digger in Wiltshire and Yorkshire. His first diggings were in the Guernsey Cromlechs, afterwards in Brittany, the Netherlands, and elsewhere.

The Society of Antiquaries, London, published his scale plans of rude stone monuments, with descriptive text. In 1871, he read a paper before the members of the Ripon Scientific Society, of which he was long an active member, on the Maison de Dieu Hospital, at Ripon. He also contributed to the Yorkshire Archæological and Topographical Journal a paper on Anglo-Saxon graves on Howe Hill, in the parish of Burneston (North Yorkshire). In July 1874, the Royal Archæological Institute, in conjunction with the Yorkshire Archæological and Topographical Society, held meetings at Ripon, and visited amongst other places, Castle Dykes, near North Stainley, where Mr. Lukis read a paper, giving an account of the excavations and the relics which he, in conjunction with Messrs. Heslington, Sharpin, and Hebden, of Ripon, had found there.

Mr. Lukis also edited for the Surtees Society, Dr. William Stukeley's Diaries and Letters, published in three volumes; and when the Ripon Millenary Festival was celebrated, in 1886, he was

an active member of the committee which was formed to carry out the arrangements, and wrote an interesting paper entitled, 'Ancient Ripon,' since included in Mr. W. Harrison's 'Millenary Record,' a beautifully illustrated volume, published in 1892. Amongst other works, the deceased gentleman was the author of 'Danish Cromlechs and Burial Customs,' 'Certain Peculiarities in the Construction of Chambered Tumuli,' 'On Flint Implements found in Tumuli in the parish of Wath,' etc., etc.

Mr. Lukis, who was a prominent Freemason, and a Justice of the Peace for Wiltshire, married Lucy Adelaide, daughter of Admiral Sir Thomas Fellowes, who survives her husband, and by whom he had issue, nine children, two sons and four daughters only surviving, the second daughter being the wife of Mr. H. C. Bickersteth, J.P., of Ripon (a son of the late Bishop of Ripon). One son is in Australia, and the other in Ceylon. For a portion of the above particulars the writer is indebted to the 'Biograph and Review' for July 1881.

That gifted authoress, Katherine S. Macquoid, in her interesting volume, 'About Yorkshire,' thus describes her visit to Wath a few years ago:—

We drove back to Wath and spent a pleasant evening with our hospitable friends (Mr. and Mrs. Lukis), who showed us the carefully restored Church. There is some curious Saxon sculptured work, there are also fragments of stone coffin lids with early thirteenth century floriated crosses carved thereon. There is also a very old vestry or sacristy on the north side of the chancel which Mr. Lukis thinks was occupied by a sacristan in charge of the vessels and treasures of the Church; there is a slit in the wall through which he could see the high altar and watch the light burning before it. The church doors were barred within by means of a wooden beam which, when not in use, slid into a hole in the door jamb; it is therefore evident that whoever secured the door must have dwelt within the building. This view was not originated by Mr. Lukis, but he considers that it solves the puzzle of the cell at Tanfield (three miles from Wath), and that the method of securing church doors from within the building is a strong argument in its favour. There is also a curious double piscina in Wath church. It is to be regretted that Tanfield was not restored with the learning and reverence that have been shown at Wath.

A committee has recently been formed, under the chairmanship of Sir Reginald Graham, Bart., of Norton Conyers (which is close to Wath, and where the talented authoress of 'Jane Eyre' at one time resided), for the purpose of placing in Wath Church a stained-glass window, or some other lasting memorial of the late much esteemed rector.

The remains of Mr. Lukis were interred on Saturday, Dec. 10th, in the ancient graveyard at Wath (where he had laboured so long and faithfully), in the presence of a large gathering of parishioners

and others from a distance, whilst letters expressive of deep sympathy were received from the Bishops of Richmond and Ripon, the Marquis of Ripon, and numerous other friends who were unable to take part in paying their last tribute of respect to the memory of one who was so ripe a scholar, so kind a friend, and of whom it may be truly recorded—

He seemed the thing he was, and joined
Each office of the social hour
To noble manners, as the flower
And native growth of noble mind.

BALDERSBY, S.O., YORKSHIRE.

W. GREGSON.

NOTE—MOSESSES.

Uncommon Moss near Market Weighton.—Nearly a hundred years ago Mr. R. Teesdale recorded in the Transactions of the Linnean Society the occurrence of *Systegium crispum* (Hedw.) at Beverley; last month I found a patch of it growing on the banks of our waterworks reservoir, thus giving it an additional locality as an East Riding moss.—J. J. MARSHALL, Market Weighton, April 4th, 1893.

NOTE—BOTANY.

Early and Late.—An instance of the freaks occasioned by the extraordinary spell of hot spring weather was one noticed near Settle on the 12th April. My sister (Miss Thompson, of Settle) and I inspected a bed of wild Lilies of the Valley (*Convallaria majalis* L.), and discovered one flower open. An hour or two later we found a fine Snowdrop (*Galanthus nivalis* L.) in a sheltered nook on the crags.—F. P. LOOSMORE, Eastwood, Notts, April 21st, 1893.

About London this year many plants are flowering three weeks earlier than usual. Plenty of Hawthorn was in flower the last week in April. It was Chestnut Sunday in Bushey Park on April 30th, a thing which has not happened for thirty years.—J. G. B.

NOTES—MAMMALIA.

Badger near Market Weighton.—On March 21st, Mr. Dunhill and some friends were turning over an old stick hill at Arras, near Market Weighton, when they unearthed a fine old dog Badger (*Meles taxus*), which, after a very fierce resistance, they succeeded in capturing. The Badger weighed 22 lbs.—J. J. MARSHALL, Market Weighton, March 28th, 1893.

Badger in East Yorkshire.—One day in the last week of March, as Mr. Marshall, of Cottam, on the high Wolds in the neighbourhood of Driffield, was riding over his farm, three or four dogs which were following him, startled something and gave chase. Thinking the animal was a fox he tried to call the dogs off: but being unable to do so, he followed the chase, the animal, the species of which Mr. Marshall did not recognise, leading the dogs a brisk pace in the direction of Sir Tatton Sykes' monument, near Sledmere. Other farmers seeing the chase, joined in, and eventually there was a field of seven or eight. When near the monument the strange animal turned and headed back to Cottam, where it fell a prey to the dogs after a run of eight miles. The dogs were beaten off, when the animal was found to be a badger (*Meles taxus*). It was put into a sack, but died before Mr. Marshall got it home. How the badger came to be at Cottam is a mystery, for it is generally understood that for years the animal has been extinct in that part of the country. This rare trophy of the chase has been sent to a Driffield taxidermist to be stuffed.—J. J. MARSHALL, Market Weighton, April 1st, 1893.

ADDITIONS TO THE LICHEN FLORA OF THE WEST RIDING OF YORKSHIRE.

ABRAHAM SHACKLETON, AND THOMAS HEBDEN,

Braithwaite, Keighley.

Cullingworth.

IN the 'Flora of West Yorkshire' by Mr. F. Arnold Lees it is stated that the sum total of West Yorkshire Lichens amounts to 258 species, and, 'compared with the known British species, the percentage of the whole is still far below that which the Mosses, Hepatics—and even the Fungi—show us,' and that 'West Yorkshire should, surely, nourish three hundred forms.'

Since the publication of that work we have conjointly worked at infrequent intervals, during short holiday excursions, a few of the more accessible districts of North West Yorkshire, chiefly in the upper watersheds of the rivers Ribble, Aire, and Wharfe.

We now offer this additional list, not as an exhaustive one, but as a contribution towards the whole.

Those species found in a different drainage area to that mentioned in 'The Flora,' appear for the sake of their geographical distribution, or if occurring upon a different substratum are also named.

Doubtful species have been referred to Dr. Nylander, of Paris, to whom we tender our sincere thanks for his kindness in examining such species.

Forms new to West Yorkshire have an asterisk prefixed.

Fam. I.—COLLEMACEI.

I. COLLEMEI.

- Collema cheileum** Ach. A. Cononley. Harden.
- ***Collema granuliferum** Nyl. W. Bolton Abbey.
- ***Collema polycarpon** Schær. L. Clapham. A. Malham.
W. Grassington.
- Collema multipartitum** Sm. L. Clapham. A. Malham, in fruit.
- Leptogium sinuatum** Huds. W. Draughton; the Strid.
- ***Leptogium schraderi** Bernh. A. Malham; Gordale; Malham Tarn, on decaying limestone scars.

Fam. II.—LICHENACEI.

II. CALICIEI.

- ***Stenocybe euspora** Nyl. (= *Calicium septatum* Leight.).
W. Bolton Woods, on thallus of *Stigmatidium crassum*.

III. SPHÆROPHOREI.

- Sphærophoron fragile** Pers. W. Grassington.

IV. BÆOMYCEI.

- Icmadophila æruginosus** Scop. (= *Bæomyces icmadophilus* Ehrh.). W. Strid.

V. CLADONIEI.

- Cladonia pyxidata** form. **chlorophora** Flk. A. Cullingworth, on turf.

- Cladonia macilenta** form. **polydactyla** Flk. A. Sandy Lane, Allerton.

VIII. RAMALINEI.

- ***Ramalina fraxinea** form. **ampliata** Ach. W. Bolton Woods.

- ***Ramalina subfarinacea** Nyl. L. Clapham.

X. PELTIGEREI.

- Peltigera rufescens** Hoffm. L. Clapham.

XI. PARMELIEI.

- Parmelia borreri** Turn. R. Stackhouse, Settle. W. Grass Wood. A. Malham.

- Parmelia conspersa** Ehrh. A. Howden Rough, near Keighley.

- Parmelia mougeotti** Sch. A. Riveoak Edge, near Keighley ; Harden Moor, near Keighley.

- Parmelia subaurifera** Nyl. A. Gordale.

- Parmelia fuliginosa** Fr. L. Clapham, in fruit. A. Malham : Skipton ; Kildwick.

- ***Physcia venusta** Ach. R. Giggleswick Scar.

- ***Physcia cæsia** Hoffm. R. Settle. A. Malham.

- Physcia obscura** var. **virella** Ach. A. Draughton Road, Skipton, fruit ; Halifax Road, Flappit, Keighley ; on stone walls.

- Physcia pityrea** Ach. R. Stackhouse, Settle.

- ***Physcia melops** Duf. A. Broughton to Skipton, on stone walls. Vide 'Addenda Nova ad Lichenographiam Europæam,' Dr. Nylander, No. 374.

XII. GYROPHOREI.

- **Umbilicaria cylindrica* Ach. L. Whernside.
Umbilicaria erosa Ach. L. Whernside.
Umbilicaria polyrhiza L. A. Riveoak Edge, near Keighley;
 Harden Moor; near Keighley.

XIII. LECANOREI.

- **Pannaria triptophylla* Nyl. A. Malham.
Leproloma lanuginosum Ach. A. Harden to Bingley, common.
Placodium murorum Hoff. L. Clapham.
 **Placodium dissidens* Nyl. L. Clapham.
 **Placodium sympagea* Ach. (Nyl.). L. Clapham.
 **Placodium cirrochorea* Nyl. L. Clapham.
 **Placodium lobulatum* Smf. L. Clapham.
Lecanora citrina Ach. A. Malham.
 **Lecanora crenulatella* Nyl. L. Clapham Railway Station.
 (See 'Naturalist,' 1886, page 374.)
Lecanora ochracea Sch. L. Clapham.
Lecanora cerina Ehrh. A. Malham.
Lecanora cerina var. *fusca* Mass. A. Malham.
Lecanora pyracea Ach. L. Whernside, on stone.
Lecanora candicans Dicks. W. Bolton Woods.
 **Lecanora chalybea* Duf. A. Malham Tarn.
 **Lecanora galactina* Ach. A. Cullingworth. R. Settle.
Lecanora dispersa Pers. A. Cullingworth.
 **Lecanora livida* Ach. A. Malham Tarn.
 **Lecanora aghardiana* Ach. L. Clapham. R. Settle.
 A. Malham.
Lecanora intricata Sch. L. Near Clapham Station; Whernside.
 **Lecanora erysibe* Ach. A. Malham.
Lecanora badia Ach. A. Harden Moor; Riveoak Edge.
 **Lecanora picea* Dicks. A. Morton; Riveoak Edge.
 **Lecanora atriseda* Fr. A. Harden Moor.
Lecanora ventosa L. A. Riveoak Edge.
Lecanora tartarea. L. Near Wharf, on trees.
 **Lecanora cinerea* L. L. Clapham.
 **Lecanora calcarea* var. *contorta* Hffm. A. Gordale.
 **Lecanora verrucosa* Ach. W. Grass Wood.

- ***Lecanora pruinosa** Sm. A. Braithwaite; Cullingworth, common on mortar on wall tops.
- ***Lecanora privigna** Ach. W. Bolton Woods.
- ***Lecanora squamulosa** Sch. A. Braithwaite; Cullingworth.
- ***Lecanora smaragdula** Whlnb. A. Braithwaite.
- ***Lecanora discreta** Ach. A. Harden Moor.
- ***Pertusaria communis** var. **rupestris** DC. L. Whernside.
Pertusaria amara Ach. W. Grass Wood.
- ***Pertusaria pustulata** Ach. W. Bolton Woods.
- ***Pertusaria leioplaca** Ach. W. Bolton Woods. A. Collected near Keighley in three localities, in year 1817; now extinct.

XIV. LECIDEINEI.

- ***Lecidea atro-rufa** Dicks. A. Flappit, near Keighley, on mud in niches of walls.
Lecidea lurida Ach. L. Norber; Clapham.
- ***Lecidea fuliginosa** Tay. L. Clapham.
- ***Lecidea subfurva** Nyl. A. Malham.
- ***Lecidea periplaca** Nyl. A. Broughton; Skipton.
Lecidea ochracea Hepp. A. Malham.
- ***Lecidea enteroleuca** Ach. A. Malham. R. Settle.
- ***Lecidea uliginosa** var. **humosa** Leight. A. Keighley Moor.
- ***Lecidea mesotropiza** Nyl. L. Clapham.
- ***Lecidea aglæa** Smmrf. L. Whernside.
- ***Lecidea mollis** Whlnb. L. Whernside.
- ***Lecidea tenebrica** Nyl. A. Malham.
Lecidea coarctata Sm. A. Cullingworth.
- ***Lecidea mesotropoides** Nyl. L. Clapham.
- ***Lecidea kochiana** Sch. L. Whernside.
- ***Lecidea lapicida** Fr. A. Malham. L. Clapham.
Lecidea lithophila Ach. A. Riveoak Edge; Cullingworth.
- ***Lecidea plana** Lahm. L. Whernside. A. Riveoak Edge; Cullingworth.
Lecidea rivulosa Ach. L. Whernside.
- ***Lecidea coriacella** Nyl. L. Whernside; Clapham.
- ***Lecidea lithophiliza** Nyl. A. Riveoak Edge. L. Whernside.
- ***Lecidea interludens** Nyl. A. Collected at Kildwick in year 1818.
- ***Lecidea luteo-atra** Nyl. A. Malham.
Lecidea lactea Flk. L. Clapham.

- **Lecidea rubidula* Nyl. A. Malham.
Lecidea confluens Web. L. Clapham.
- **Lecidea confluens* form. *lævigata* Leight. A. Malham.
- **Lecidea solediza* Nyl. L. Clapham.
- **Lecidea contigua* form. *pustulata* Leight. A. Harden Moor.
- **Lecidea cyaniza* Nyl. A. Harden Moor. See Nyl., Addenda, No. 1196.
- **Lecidea gelatinosa* Flk. A. Harden Moor.
- **Lecidea metzleri* Körb. A. Malham.
Lecidea calcivora Ehrh. A. Malham.
- **Lecidea taylori* Salw. L. Clapham.
- **Lecidea verruculosa* Borr. A. Malham.
- **Lecidea disciformis* Fr. A. Malham. Collected at Keighley, year 1811; now extinct.
- **Lecidea myriocarpa* form. *quercicola* Rabh. A. Broughton, near Skipton.
- **Lecidea myriocarpa* form. *areolata* Leight. A. Malham, on sandstone.
- **Lecidea interpolata* Stirt. R. Giggleswick.
- **Lecidea candida* Web. L. Clapham.
- **Lecidea subnigrata* Nyl. A. Malham.
- **Lecidea lenticularis* Ach. R. Stackhouse, near Settle.
Lecidea tricolor With. W. Bolton Woods.
- **Lecidea prasiniza* Nyl. W. Grass Wood.
- **Lecidea lutosa* Mont. A. Cullingworth; Riveoak Edge.
- **Lecidea cyrtella* Ach. A. Malham, on limestone.
- **Lecidea ehrhartiana* Ach. W. Grass Wood.
- **Lecidea carbonacea* Anzi. R. Ribbleshead; Horton.
A. Malham.
- **Lecidea aromatica* Sm. A. Skipton to Embsay.
- **Lecidea melœna* Nyl. R. Ribbleshead.
Lecidea sphæroides Dicks. R. Lynn Gill.
- **Lecidea sabuletorum* Flk. A. Common on dead mosses on walls. W. Strid, on living *Thamnium alopecurum*.
- **Lecidea dufourii* Ach. W. Bolton Woods. R. Ribbleshead.
Lecidea muscorum Sw. L. Clapham.
Lecidea geographica form. *atro-virens* L. A. Harden Moor.
- **Lecidea obscurata* Ach. R. Horton. L. Clapham.
Lecidea lavata Fr. L. Clapham.

- **Lecidea parapetræa* Nyl. A. Harden Moor; Malham.
- **Lecidea excentrica* Ach. A. Malham. L. Clapham.
- **Lecidea flotovii* Körb. W. Bolton Woods.

XV. GRAPHIDEI.

- Graphis scripta* var. *varia* Ach. A. Malham.
- **Opegrapha lyncea* Sm. W. Bolton Woods.
- **Opegrapha atra* var. *arthonoidea* Leight. R. Giggleswick Scar.
- **Opegrapha amphotera* Nyl. W. Bolton Woods; Grass Wood.
A. Malham.
- **Opegrapha vulgata* var. *stenocarpa* Ach. R. Giggleswick.
- Stigmatidium crassum* Dub. W. Bolton Woods.
- **Arthonia lurida* Ach. W. Bolton Woods.
- **Arthonia punctiformis* Ach. A. Broughton, near Skipton.
- **Arthonia astroidea* Ach. A. Malham. R. Settle.

XVI. PYRENOCARPI.

- Normandina lætevirens* T. & B. L. Whernside.
- Endocarpon rufescens* Ach. A. Gordale Scar.
- **Endocarpon lachneum* Ach. R. Giggleswick Scar.
- Verrucaria mauroides* Schær. R. Giggleswick. A. Malham.
L. Clapham.
- Verrucaria viridula* Ach. L. Clapham.
- **Verrucaria plumbea* Ach. A. Malham.
- **Verrucaria microsporoides* Nyl. A. Malham.
- **Verrucaria glaucina* Ach. W. Grassington.
- **Verrucaria canella* Nyl. A. Malham.
- **Verrucaria aethibola* Whlbn. A. Malham.
- **Verrucaria hydrela* Ach. A. Braithwaite, Keighley.
- **Verrucaria cataleptoides* Nyl. form. *ferruginosa*. A. Malham.
- **Verrucaria mutabilis* Borr. A. Malham.
- **Verrucaria muralis* Ach. A. Common on mortar on old walls.
- **Verrucaria peloclita* Nyl. A. Malham.
- **Verrucaria peloclita* form. *continuella* Nyl. A. Malham.
- **Verrucaria macrostoma* form. *aphanostoma* Duf. A. Cullingworth; Malsis; Crosshills.
- **Verrucaria myriocarpa* Hepp. A. Malham.
- **Verrucaria limitata* Kphb. A. Malham.
- **Verrucaria malhamensis* Nyl. A. Malham (See 'Naturalist,'
January, 1892).

- **Verrucaria pyrenophora* Ach. L. Clapham. A. Malham.
 **Verrucaria saxicola* Mass. L. Clapham.
 **Verrucaria calcivora* Nyl. A. Skipton to Draughton.
 **Verrucaria albida* Arn. A. Braithwaite; Cullingworth.
 **Verrucaria intercedens* Nyl. A. Cullingworth.
 **Verrucaria spurcella* Nyl. A. Malham; Gordale (See
 'Naturalist,' January 1892).
 **Verrucaria deminuta* Arn. A. Malham.
 **Verrucaria chlorotica* Ach. A. Malham.
 **Verrucaria codonoidea* Leight. L. Clapham.
Verrucaria cinerea Pers. W. Bolton Woods.
Verrucaria analepta Ach. W. Giggleswick.
 **Verrucaria erratica* Mass. A. Parasitic on *Parmelia saxatilis*.
 **Verrucaria thelostoma* Harr. A. Malham.
 **Verrucaria analeptiza* Nyl. A. Collected near Keighley in
 year 1817.
 **Verrucaria rugulosa* Borr. A. Malham.
 **Verrucaria fusco-agrillacea* Anzi. A. Malham.

NOTES—ORNITHOLOGY.

Craven Bird-Notes.—Several Whooper Swans (*Cygnus musicus*) have been shot near Long Preston; two out of a 'herd' of ten or more on the Ribble, about January 24th, and another a few days later at Bookilber Rabbit Warren. The others, I hope, escaped—at any rate from this neighbourhood. I saw the last one I mentioned—a fine adult bird, 17 lbs. weight. A Green Sandpiper (*Helodromas ochropus*) was seen on the Ribble below Settle on the following dates in 1892—March 19th and 26th, April 14th, October 30th, and December 13th. It has also been seen on January 9th, February 1st, and February 4th, 1893, so that it may be presumed it is the same bird, which has wintered here.—EDWARD PEAKE, Giggleswick School, Settle, February 12th, 1893.

Flamborough Bird-Notes.—This season has brought some very rare species that seldom make their appearance in this part. One of these occurrences is the arrival this early spring of the Avocet (*Recurvirostra avocetta*), of which a pair were seen for several days, one of them, the female, coming into my possession for preservation. On April 8th the Blackstart (*Ruticilla tithys*) was seen; on April 15th the Redstart (*R. phœnicurus*); and on April 28th quite a rush of Whitethroats (*Sylvia cinerea*) arrived on the Headland. Mr. D. Atkinson informs me that he saw twenty Dotterels (*Eudromias morinellus*) on May 8th at Maiden's Grave; and on May 9th two Hoopoes (*Upupa epops*) near Buckton Hall.—MATTHEW BAILEY, Flamborough, May 18th, 1893.

Starlings Hawking for Flies.—On Sunday, May 14th, near Plompton, I observed a Starling (*Sturnus vulgaris*) fly from an old barn where it had been feeding its young. Directly it left the nest it commenced flying to and fro, catching flies, exactly in the manner of the swallow, and when it had obtained sufficient it flew back to the nest with them. I have previously seen starlings catch flies in a desultory manner, at odd times, but never before saw one go about it in such a deliberate fashion. I can only account for it by the fact that the long continued drought has caused a scarcity in the usual food-supply of these birds, thus compelling them to seek an addition from other sources.—RILEY FORTUNE, Harrogate, May 17th, 1893.

June 1893.

NOTES AND NEWS.

The 'Synopsis of Genera and Species of Malveæ' on which Mr. Edmund G. Baker, F.L.S., has so long been engaged, still continues to appear at intervals in the Journal of Botany, the latest instalment being in the number for March 1893.

—>co<—

A couple of Burton-on-Trent botanists, Messrs. J. E. Nowers and James G. Wells, have been paying attention to the Plants of the Aran Islands in Galway Bay in 1890, and have published an interesting list and notes concerning them, in the June 1892 number of the 'Journal of Botany.'

—>co<—

Geologists will welcome the beginning of the publication by the Geological Survey of the long-expected 'index-map' on a scale of four miles to the inch. Among the sheets now ready for issue is that of East Yorkshire (No. 6). While incorporating much detail, these maps are singularly clear, and the complete series will constitute by far the best geological map of England yet available.

—>co<—

In 'Notes and Queries' for May 13th, 1893, Dr. J. A. H. Murray, of Oxford, the Editor of the new standard English Dictionary, has a note as to the use of the words 'crow' and 'rook' for *Corvus frugilegus*. He wishes to ascertain how far north in England the word 'rook' is used as a true vernacular (not merely book) name for that species, mentioning that 'crow' is the word used in Lancashire, Yorkshire, and North Lincolnshire. Will our readers give the benefit of their knowledge on this point?

—>co<—

An address delivered at the Anniversary Meeting of the Hertfordshire Natural History Society, by John Hopkinson, F.L.S., F.G.S., etc., the president, has been reprinted from the transactions and issued in pamphlet form. Mr. Hopkinson, who is well known in Yorkshire, especially in Leeds, was the founder of this Society, and to him it owes much of its success. The address, which is a comprehensive sketch of Darwin, his life and work, is couched in clear language, and being interspersed with anecdote will be of interest to the general reader.

—>co<—

At a meeting of the Entomological Society of London which was held on the 10th May, 1893, Professor L. C. Miall, F.R.S., communicated a paper entitled 'Dicranota: a Carnivorous Tipulid Larva'; and the President announced that the new Library Catalogue, which had been edited by Mr. Champion, with the assistance of Mr. McLachlan and Dr. Sharp, was now ready for sale to the public at 9s., and to the Fellows of the Society at 6s. a copy.

—>co<—

The Naturalists of Lincolnshire are to have an excursion at Mablethorpe on Monday, June 12th, for the purpose of investigating its natural history capabilities. The place is one that will probably well repay careful search. There is, perhaps, a certain sameness in the flora, due to the iteration and abundance of individuals of a few species, but these are of a kind quite rare elsewhere. The drains and ponds afford many species of Mollusca and Coleoptera, while the Trichoptera are specially abundant. The sand-hills yield some of our best Coleoptera and *Chelifer degeerii* and the Natterjack Toad are also found here. The main party will leave Mablethorpe Station at 11 a.m., and proceed along the sand-hills to East Theddlethorpe, then turning southwards and crossing the lines return to Mablethorpe to the Book-in-Hand Hotel, where refreshments will be provided, after which there will be a general meeting. The names of many of the most prominent naturalists of Lincolnshire and of some in Yorkshire are connected with this excursion, which has been organised by Mr. Walter F. Baker, who may be addressed at 18, Hyde Terrace, Leeds, by any one desirous of joining the party. There is every appearance of this meeting being a great success, and it is sincerely to be hoped that it will be the precursor of a regular series of meetings for considering the great natural advantages that Lincolnshire possesses, and concerning which it is surprising that so little appears to have hitherto been done.

THE BIRDS OF LANCASHIRE AND OF ESSEX.

The Birds of Lancashire. By F. S. MITCHELL, M.B.O.U. Second Edition, revised and annotated by HOWARD SAUNDERS, F.L.S., F.Z.S., etc., with additions by R. J. HOWARD, M.B.O.U., and other local authorities. Illustrated. 265 pp. and map. London: Gurney and Jackson. 1892.

The Birds of Essex. A contribution to the Natural History of the County. London: Simpkin, Marshall & Co. Limited. 1890.

It speaks well for the popularity of Mr. F. S. Mitchell's 'Birds of Lancashire' that a second issue should be called for after a lapse of only seven years. In the absence of the author from the country the task of editing the new edition has devolved upon Mr. Howard Saunders, who, we need hardly say, has made the best use of the new material placed at his disposal.

As Mr. Saunders does not claim any special knowledge of Lancashire birds, he has naturally availed himself of the assistance of several well-known local ornithologists, his principal helper being Mr. R. J. Howard, of Blackburn, whose name appears on the title page. We have much pleasure in noticing the work in the current number of the 'Naturalist,' but as many of our readers will be already familiar with the details contained in the first edition, we propose therefore to confine our remarks mainly to the new information now presented.

In the original edition Mr. Mitchell enumerated 259 species as comprising the Lancashire avi-fauna. Owing to a curious mistake one species—the Cream-coloured Courser—has now been eliminated. On the other hand, five new species—Purple Heron, Sociable Plover, Wilson's and the White-faced or Frigate Petrel, and Black-necked Grebe—have been added. Unfortunately the first-named has still no valid claim to be included in the county list, as the example noticed was obtained at Alderley Edge, a locality some distance within the Cheshire borders. The Sociable Plover and the Frigate Petrel are both additions to the Lancashire and also to the British lists. The Plover has a curious history. It appears to have formed one of a group of stuffed birds in a case examined by Mr. Mitchell, and identified by him as a Cream-coloured Courser, as recorded in his original volume. Subsequent examination under more favourable circumstances revealed the fact of its being a no less distinguished stranger than the Sociable Plover, a species inhabiting the south-eastern portions of Europe. The Frigate and Wilson's Petrels were curiously enough both found dead, with many other birds, on the shores of Walney Island, within a few days of one another. Some ornithologists may perhaps question the wisdom of including a species in a county list on the strength of a single example cast up by the sea, but in our opinion no harm can be done so long as full

particulars relating to the circumstances are given, as in the present case. We owe the addition of the Frigate Petrel to the British list to the indefatigable researches of Rev. H. A. Macpherson, who has included a beautifully-executed figure of the species in his recently published 'Vertebrate Fauna of Lakeland.'

Amongst other new notes we welcome the additional information relating to the various species of grey geese frequenting the Lancashire marshes, and also interesting items referring to the interbreeding of the Pochard and Tufted Duck, and pinioned with wild Wigeon. On the other hand, further research is required into the distribution during the breeding season of the Chiff-Chaff, Reed Warbler, and White Wagtail, none of them rare species, but still worthy of the attention of Lancashire ornithologists, who we hope are not sitting down under the impression that, locally, nothing more remains to be done. It may be remarked that the Mealy Redpoll is still an absentee from the county list; though it is suggested that some larger and greyer Redpolls, previously referred to the commoner species, may have been examples of the Mealy Redpoll.

With regard to the general details of the book, beautifully executed illustrations of the Black-throated Wheatear, Wall-Creeper, and Sociable Plover replace the coloured plates of the first edition. All of them are good, but the Wheatear is perhaps hardly sprightly enough for a Chat. The remaining wood-cuts are unchanged, and we think it rather a pity, in view of the recent improvements in mechanical photo-printing, that they were not discarded in favour of others more attractive. The book as a whole is very satisfactory, the binding good, and the type, except in the case of the map, clear. Ornithologists, especially those who require local information up to date, will find it a valuable addition to their book-shelves.

Whilst writing on the subject of county faunas, it will perhaps not be out of place to call the attention of North of England naturalists to Mr. Miller Christy's 'Birds of Essex,' a profusely illustrated volume published under the auspices of the Essex Field Club. This work, published more than two years ago, has been waiting our attention for some little time. The author, from his former connection with the county, will be well known to the majority of Yorkshire naturalists as an excellent observer. As the book treats of a district lying at some distance from our own area, we can only remark that Mr. Miller Christy has accomplished his task in a most complete and satisfactory manner; the biographies of Essex ornithologists and the information relating to wild fowl decoys being especially interesting. For these chapters alone the work is well worth reading.—F. B. W.

FORGE VALLEY IN WINTER.

REV. W. C. HEY, M.A., M.C.S.,

Vice-President of the York Philosophical Society, West Ayton, near Scarborough.

As I enter the portals of this deep cañon this December afternoon, I feel like one who steps at midnight into the silent aisles of some cathedral, which hitherto he had only visited when the sunshine was bringing out the rich colours of its stained windows, and the voices of the choristers, and the pealing of the organ, flooding its long vistas with harmony. For the silence of the winter woods is their most impressive feature. Summer is full of sound,—chirpings of birds, hummings of insects, swish-swish of the leafy boughs, while an indescribable delicious murmur, like the sound of fairy kisses, fills the warm quick air.

Now all is so still that I can plainly hear each single drip of a half-frozen rill, as it falls upon the surface of the river, and the faint creaking of a breaking larch-bough a hundred yards away, appears loud. The snow covers the sides of the ravine, steep though they be, and every tree-trunk, every branch, every twig, is brought out into dark relief. The woods are seen to be not half so unfathomable as they appeared in summer, when layer upon layer of broad foliage extended between the top surface and the floor of the great green sea. I feel surprised at their shallowness, as one who, sailing upon a still sea, is startled to perceive through the pellucid water, the rocks and seaweed at the bottom. Here and there, under the trees, are seen little patches of dark green, plants of the spurge-laurel, tall enough to rise above the snow. These, and a few withered oak leaves, alone vary the great study in black and white, which the dull, silent, winter's day presents. A week or two ago, many a wild-rose bush was tipped with coral; spindle trees glowed with such pink and orange tints (their splendid arillodes), that one might fancy the dyes of an autumn sunset had been spilt among them. But, either the wild weather, or the fieldfares, have stripped the woods of all their jewellery, and they stand forlorn and desolate as a church which puritanical zeal has dismantled and white-washed.

Yet this deep silence, this weird monotony, by its very vacancy tempts the imagination to people these solitary glades with their ancient inhabitants, and create sounds for the vacant ear. And thought can often prove herself richer than reality, for all the past of both fact and fancy is at her disposal. On yonder snowy ridge I seem to behold a herd of reindeer standing, their forked antlers

sharply defined against the ashy sky, and a troop of wild hunters appear, armed with stone hatchets and flint barbs. Presently they are gone, both the hunters and their quarry, and the giant form of a mammoth, with curving tusks and shaggy mane, grows into their place. As the short afternoon turns duskier, I listen to the muffled footfalls of a pack of wolves, their dismal howlings re-echo from the rocky sides of the valley. Deeper and deeper falls the twilight; a shivering breath of cold air passes by me and rustles the withered oak leaves. Is it really only a passing breeze and not some phantom of Death sweeping by on its awful errand? Yonder dark, ill-defined object might be only a stump bearded with lichens, or some misshapen dwarf of Scandinavian mythology, revealing himself thus late to the eye of a posthumous faith.

Wandering on thus, lost in fancy, I am suddenly recalled to myself, startled for an instant into believing the creatures of my imagination have actually become corporeal and animated. For surely there is a real sound of rushing feet in the wood, this is a real wild cry ringing from the rock above. A rabbit, pursued by two dogs, rushes close by my feet, and explains the first sound; the unearthly cry proceeds from a couple of jackdaws, returning to their night-roost in the ice-draped crags on high.

NOTE—LEPIDOPTERA.

Melanippe hastata near Sheffield.—On the 15th inst. I came across several examples of this moth when walking through the Wharnccliffe woods, between Deepcar and Oughty Bridge. I do not know whether the species is widely distributed in Yorkshire or not, but a note of its occurrence here may possibly be of interest to local entomologists. Two days before, I saw a female Orange Tip (*Euchloë cardamines*) fluttering round a head of charlock in the same locality.—CHAS. OLDHAM, Ashton-on-Mersey, May 18th, 1893.

We took *Melanippa hastata* freely in the Wharnccliffe wood years ago, and the locality has long been known as one of the best West Yorkshire habitats of the species, which, moreover, is widely distributed throughout the county.—G. T. P.

NOTE—MOLLUSCA.

Six-banded *Helix nemoralis* at Adel near Leeds.—I am indebted to my friend Mr. W. Howard, who is at the head of the composing department at Messrs. McCorquodale & Co. Limited, for a number of examples of *Helix nemoralis* collected by him yesterday at Adel near Leeds, where there were scores crawling about the grass and on walls. There were examples of the vars. *libellula* and *rubella*, of various band-formulæ, the most interesting being the seldom-met-with six-banded form caused by the splitting of the third band. The specimen is nearly full-grown although without lip, and its colour and band-formula rank it as var. *libellula* 123345. The bands coalesce towards the mouth but are perfectly distinct and unmistakable on the greater portion of the shell.—W. DENISON ROEBUCK, Sunny Bank, Leeds, May 29th, 1893.

BIBLIOGRAPHY:

Papers and Records published with respect to the Natural History and Physical Features of the North of England.

LEPIDOPTERA, 1890.

THE present instalment has been compiled and edited by

WM. DENISON ROEBUCK, F.L.S.

The previous instalments of the Bibliography of Lepidoptera have appeared as follows:—

- For 1884, in 'Naturalist,' July and Aug., 1885, pp. 285-292.
 „ 1885, 6, 7, „ Feb. and March, 1888, pp. 58-78.
 „ 1888, „ Sept. and Oct., 1890, pp. 279-299.
 „ 1889, „ May and June, 1891, pp. 157-165.

The counties and vice-counties of which cognizance is taken are the following, as named and numbered in the Watsonian scheme:—

53, Lincoln S. ; 54, Lincoln N. ; 56, Notts. ; 57, Derby ; 58, Cheshire ; 59, Lancashire S. ; 60, Lancashire W. ; 61, York S.E. ; 62, York N.E. ; 63, York S.W. ; 64, York Mid W. ; 65, York N.W. ; 66, Durham ; 67, Northumberland S. ; 68, Cheviotland ; 69, Westmorland with Furness ; 70, Cumberland ; and 71, Isle of Man.

ANON [various observers].

Derbyshire.

Calendar of Nature, 1879 [near Burton-on-Trent: *Vanessa urtica*, *Hybernia rupicapraria*, *H. leucophaearia*, *Phigalia*, *H. progemmaria*, *Tænio-campa gothica*, *T. stabilis*, *T. instabilis*, *T. rubricosa*. *Pieris brassicae*, *P. rapæ*, *Selenia iliunaria*, *Antictea badiata*, *Anthocharis*. *Spilosoma lubricipeda*, *Dicranura vinula*, *Plusia gamma*, *Rumia*, *Cynthia*, *Hepialus humuli*, *Polyommatus phleas*, *Melanthia albicillata*, *Abraxas grossulariata*, *Adela degeerella*, *Camptogramma bilineata*, *Thyatira batis* (Bretby). *Cidaria aotata*, *Abraxus ulmata*, noted, with dates, but without localities except where specified]. 4th. Ann. Rep. Burton-on-Trent Nat. Hist. & Arch. Soc., 1880, pp. 67-70.

ANON. [various observers].

Derbyshire.

Calendar of Nature for 1882 [near Burton-on-Trent, giving dates for *Vanessa urticae* (Ticknall), *Arctia caja*, and *Gonoptera libatrix*]. 7th Ann. Rep. Burton-on-Trent N. H., etc., Soc., for year ending 31st March, 1883, p. 14.

ANON. [not signed].

Derbyshire.

The Lepidoptera of Burton-on-Trent and Neighbourhood [a valuable list, founded on that published in the 'Entomologist' in 1885; the district is somewhat indefinite, being from 15 to 20 miles round Burton in every direction; a geological notice by Frank E. Lott is given in the introduction; the list includes 40 Rhopalocera, 20 Sphinges, 60 Bombyces, 171 Noctuae, 166 Geometrae, 32 Pyralides, and 12 Pterophori, in the acceptation of South's 'Entomologist' List, which is the standard adopted for arrangement and nomenclature; 17 names of contributors of information are given]. Trans. Burton-on-Trent Nat. Hist. and Arch. Soc., vol. i., 1889, pp. 114-138.

- ANON. [not signed]. Westmorland.
Royal Oak Day [29th May; The Author of 'Troutbeck: its Scenery . . . and Folk-lore' (Kendal, 1876), says: 'The day is also a fatal one for white butterflies [genus *Pieris*], which the lads term "papishes," and hunt to the death; while variegated ones [genus *Vanessa*] continue to be styled *King George's*, and loyally admired']. Westm. Note-Book and Nat. Hist. Record, vol. i., part 6, June 1889, p. 255.
- ANON. [not signed]. Isle of Man.
Poplar Hawk-Moth [(*Smerinthus populi*) at Ramsey, June 28th, and at Glencrutchery, Onchan, June 19th]. Yn Lioar Manninagh, No. 3, July 1889, i. 90.
- ANON. [not signed]. Isle of Man.
Phenological Observations [in the Isle of Man; dates given for *Pieris rapæ*, *Polyommatus alexis*, and *Vanessa cardui*]. Yn Lioar Manninagh, No. 5, April 1890, pp. 161-162.
- ANON. [not signed]. Derbyshire.
Penketh [excursion, 23rd May, to Monsall Dale; *Anthocharis* common]. N. H. J., June 15th, 1890, p. 92.
- ANON. [not signed]. Yorkshire, Lanc., and Cheshire.
Review. The Lepidoptera of Lancashire and Cheshire, by Dr. J. W. Ellis [in which the records for Lancashire and Cheshire are compared with those for Yorkshire in detail for the genus *Acidalia*]. Young Nat., Aug. 1890, pp. 157-158.
- J. E. R. ALLEN. Lanc. S.
The Sallow Season of 1890 [at Bolton, Lancs.; *Tæniocampa rubricosa* and *T. gothica* taken]. Ent., June 1890, p. 202.
- F. W. A[NDREWS]. Derbyshire.
Calendar of Nature, 1884 [at Burton-on-Trent; date given for *Rumia*]. 9th Ann. Rep. B.-on-Trent N. H. and Arch. Soc. for 1884, pub. 1885, pp. 23-25.
- J. ARKLE. Cheshire.
Gas-Lamp Entomology [at Chester; detailed notes, followed by list of numerous lepidoptera captured]. Ent., Feb. 1890, p. 61-65.
- J. ARKLE. Cheshire.
Gas-Lamp Entomology . . . additions to my list [*Tortricodes hyemana* and *Lemnatophila phryganella*, at Chester]. Ent., March 1890, p. 100.
- J. ARKLE. Cheshire.
The Sallow Season of 1890. . . . Chester [disappointing; *Tæniocampa gothica*, *T. stabilis*, *T. incerta*, *T. cruda*, *T. gracilis* (not seen), *Triphosa dubitata*, *Anticlea badiata*, *Cidaria suffumata*, larvæ of *Xanthia fulvago* (cerago)]. Ent., June 1890, p. 201.
- J. ARKLE. Cheshire.
Crocallis elinguaris var. *trapezaria* (?) [taken 20th August, 1890, from a Chester gas-lamp]. Ent., Sep. 1890, p. 291.
- J. ARKLE. Cheshire.
The Cheshire Plague of Caterpillars: a Myth [larvæ being really very scarce; *Amphidasys betularia*, *Hylophila bicolorana*, *Cabera pusaria*, all scarce as larvæ at Delamere Forest in August]. Ent., Sep. 1890, p. 293.
- J. ARKLE. Cheshire.
Notes on *Tæniocampa opima* [at Wallasey; life-history and habits described; *Nyssia zonaria*, *Mesotype virgata* (*lineolata*) also mentioned]. Ent., Oct. 1890, p. 307-309.

- J. ARKLE. Cheshire.
Captures from Gas-Lamps [at Chester, September 5th, 1890: *Phibalapteryx lignata*, *Coremia propugnata*, *Cidaria testata*, *C. immanata*, *Melanippe fluctuata*, *Halia wavsaria*, *Ennomos tiliaria*, *Paraponyx stratiotalis*, *Noctua glareosa* (new record for Chester), *Luperina testacea*, *L. cespitis*, *Neuronia popularis*, *Anchocelis lunosa*, *Cosmia trapezina*, *Noctua xanthographa*, *Hydræcia micacea*, *Porthesia auriflua*, and *Hepialus humuli*]. Ent., Dec. 1890, p. 385.
- EUSTACE R. BANKES. York S.W.
Scoparia angustea [and its dates of emergence at Portland and Huddersfield]. E. M. M., Jan. 1890, p. 8.
- W. B. BARBER. York S.W.
[Female Mottled Umber (*Hybernia defoliaria*) near Sheffield, 20th Dec.] N. H. J., March 15th, 1890, p. 30.
- W. B. BARBER. York S.W., Cumberland.
York, Bootham, Natural History, &c., Club [*Abraxas ulmata* at Abbeydale, Sheffield; at Seascale, *Satyrus semele*, *Argynnis aglaia*, *S. tithonus*]. N. H. J., Sep. 15th, 1890, p. 113.
- CHARLES G. BARRETT. Isle of Man.
[*Phycis subornatella* Dup. from Isle of Man, exhibited]. Proc. Ent. Soc. Lond., Feb. 5th, 1890, p. ii.; Ent., March 1890, p. 102; E. M. M., March 1890, p. 92.
- C. G. BARRETT. Lanc. S.
[Exhibition of the widely distributed Asiatic and African *Botys mutualis* Zell. taken by C. S. Gregson near Bolton, Lancs.]. Proc. Ent. Soc. Lond., March 5th, 1890, p. vii.; Young Nat., April 1890, p. 67; Zool., April 1890, p. 149; Ent., April 1890, p. 141; E. M. M., April 1890, p. 120.
- C. G. BARRETT. Durham or York N.W., Furness or Westmorland.
***Bryotropha obscurella*, Hein., a British species [from Darlington district (Sang) and Windermere district (Hodgkinson)].** E. M. M., April 1890, p. 112; Proc. Ent. Soc. Lond., April 2nd, 1890, p. xi.
- C. G. BARRETT. Lanc. S. and W., Cheshire, Furness.
***Deilephila galii* in Lancashire and Cheshire [discussed in respect of the causes which bring about periodical abundance; and stating that the larva is to be found somewhere on the sandy coast from Llandudno to Grange every year].** E. M. M., Nov. 1890, p. 300.
- C. G. BARRETT. Lanc. S., Cheshire.
Lepidoptera upon Coast Sandhills [scarce this season; notes as to *Agrotis cursoria*, *A. præcox*, *A. valligera*, *A. tritici*, *Triphaena pronuba*, *T. orbona*, *Xylophasia polyodon*, *Caradrina cubicularis*, *Melanippe galiata*, *Eubolia lineolata*, *Peronea permutana*, *P. aspersana*, *Spilonota incarnatana* (*amænana*), *Lasiocampa trifolii* noted as captured or observed on the Lancashire or Cheshire coast]. E. M. M., Nov. 1890, p. 301.
- J. BATTY. York S.W. or Derbyshire.
Spring Notes [from the Moors near Sheffield: *Lithocolletis vacciniella* and *Nepticula weaveri* taken]. Ent. Record, June 15th, 1890, p. 63.
- J. BATTY. York S.W.
Varieties of *Arctia caia* [bred from larvæ from Loxley Moor edge, near Sheffield; variety described]. Ent., Nov. 1890, p. 344.
- J. BATTY. York S.W.
Autumn Notes.—Sheffield [*Eupithecia nanata*, *E. minutata*, *E. assimilata*, *E. lariciata*, *Phoxopteryx ramana* (*lactana*), *Coleophora laripennella*, *C. virgaurella*, *Lithocolletis roboris*, *L. salicicolella*, *L. faginella*, *L. pomifoliella*, *L. emberizæpennella*, *Cemiostoma scitella*, *Nepticula aucupariella*, *N. argyropeza*, and *N. myrtillella* in the larva state, and good plants noted]. Ent. Rec., Dec. 15th, 1890, p. 251.

H. BAXTER.

Lanc. W.

Notes of the Season.—Lepidoptera [at St. Anne's-on-Sea; *Orgyia fascelina*, *Elachista argentella*, *Choreutis scintillulana*, and *Leucania littoralis*]. Ent. Record, July 15th, 1890, p. 103.

HOLMES BAXTER.

Lanc. W.

Notes of the Season . . . St. Anne's-on-Sea [*Lithocolletis messaniella* (Lytham), *Agrotis cursoria*, *A. præcox*, *Dictyopteryx holmiana*, *A. nigricans* (not yet seen), *Peronea aspersana*, *Ædematophorus lithodactylus*, *Depressaria nanatella*, and *Choreutes scintillulana* noted]. Ent. Record, Sep. 15th, 1890, p. 155.

T. BAXTER.

Lanc. W.

Spring Notes [from St. Anne's-on-Sea, Lancashire; *Notodonta ziczac* and *Dicranura vinula*]. Ent. Record, June 15th, 1890, p. 63.

T. BAXTER.

Lanc. W.

Black var. of *Zygæna filipendulæ* [at Fleetwood; two reared from pupæ in 1888; description given]. Ent. Record, Dec. 15th, 1890, p. 240.

T. BAXTER.

Lanc. W.

Notes of the Season (Lepidoptera) . . . St. Anne's-on-Sea [sugar a failure, attracting only *Triphæna pronuba* and *Amphipyra tragopogonis*; *T. orbona* and *Xylophasia monoglypha* on the sandhills, *Smerinthus ocellatus* larvæ commoner, *S. populi* scarcer than usual, *Dicranura vinula* and *Agrotis cursoria* plentiful, *Satyrus semele* and *Argynnis aglaia* scarcer, *Bombyx quercus* and *Orgyia fascelina* larvæ commoner, larvæ of *B. rubi* in quantity, *Liparis salicis* fairly common, *Notodonta dictæa* and *N. ziczac* very scarce, *Leucania littoralis* abundant at Lytham, *L. pallens* and *L. impura* plentiful, *Miana strigilis*, *M. fasciuncula*, *M. literosa* and *M. bicoloria* scarce, *C. cubicularis* common, *Agrotis*, all scarce except *A. cursoria*, *A. nigricans* not seen, *A. præcox*, *A. valligera*, *A. tritici*, *A. aquilina*, and *A. exclamatoris* all very scarce, *A. segetum*, *A. suffusa*, and *A. corticea* not seen, a few *Luperina testacea* and *L. cespitis* at lamps, *Noctua xanthographa* common, the others scarce, *Tæniocampa gracilis*, *T. opima*, *T. incerta*, *T. stabilis*, *Orthosia lota*, *Epunda lichenea*, *Cucullia umbratica*, all scarce, *Hadena dentina* not seen for two years, *Plusia gamma* scarce, *Phytometra ænea* taken, *Cidaria testata* and *Ennomos tiliaria* plentiful, *Ephippiphora populana*, *Choreutes scintillulana*, *Peronea aspersana*, *P. hastiana*, *Eupæcilia vectisana*, *Sericoris literana*, *Pterophorus lithodactylus*, *Anerastia loteila*, *Hypermezia cruciana*, *Tortrix forsterana*, *T. podana*, *T. heparana*, *Peronea sponsana*, *P. schalleriana*, *P. comparana*, *Teras caudana*, *Grapholitha trimaculana*, *Ephippiphora scutulana*, *Aspis udmanniana*, *Sericoris cespitana*, *S. rivulana*, *S. urticana*, *S. lacunana*, *Sciaphila subjectana*, *Grapholitha nigromaculana*, *Eupæcilia dubitana*, *E. atricapitana*, *Pyrausta purpuralis*, *Pyralis farinalis*, *Harpiteryx xylostella*, *H. nemorella*, *Depressaria nanatella*, *D. arenella*, *D. propinqua*, *D. subpropinquella*, *D. rhodochrella*, *D. liturella*, *D. conterminella*, *D. angelicella*, *D. ocellana*, *D. yeatiella*, *D. applana*, *D. ciliella*, *D. badiella*, *D. heracleana*, *Gelechia marmorea*, *G. umbrosella*, *G. populella*, *G. sororculella*, *G. tenerella*, *G. terella*, *Coleophora geniste*, *Batrachedra præangusta*, *Lithocolletis alnifoliella*, and *Cemiostoma laburnella* taken almost all on the sandhills]. Ent. Rec., Dec. 15th, 1890, pp. 247-248.

[T. R.] BILLUPS.

Isle of Man.

[Exhibition of Parasites bred from Manx *Peronia hastiana*]. South Lond. Ent. Soc., 9th Oct. 1890; Young Nat., Nov. 1890, p. 209.

E. BIRCHALL.

Isle of Man.

Ægoeria philanthiformis.—Abstract [of paper; the Isle of Man is the only locality where it is abundant; details entered into]. Trans. Isle of Man N. H. S., vol. i., 1879-1884 (publ. 1888), pp. 13-14.

- EDWIN BIRCHALL. Isle of Man.
Peculiarities of the Isle of Man Lepidoptera [of which *Vanessa urtica*, *Agrotis lucerneae*, *Cirrhædia xerampelina*, *Dianthæcia capsophila*, *D. cæsia*, and *Tephrosia biundularia* are cited as offering peculiar variations]. Wallace's *Island Life*, ii. 332; reprinted, *Yn Lioar Manninagh*, No. 3, July 1889, *Back Transactions*, i. 51-52.
- W. G. BLATCH. Westmorland.
[Phibalapteryx lapidata taken at Shap Fell, Sep. 1889; first recorded capture in England]. *E. M. M.*, April 1890, p. 118; *Ent.*, April 1890, p. 144.
- G. A. BOOTH. Furness.
Notes of the Season (Lepidoptera) . . . Grange-over-Sands [*Epunda nigra* fairly common, *Plusia iota*, *Pl. pulchrina*, *Cucullia umbratica* attracted by Scotch lilac, larvæ of *Dicranura furcula*, *Smerinthus populi*, *S. ocellatus*, and *D. vinula* plentiful, *Erebia medea* abundant]. *Ent. Rec.*, Dec. 15th, 1890, p. 247.
- GEO. A. BOOTH. Isle of Man.
Dianthæcia cæsia and Polia nigrocincta in the Isle of Man [a nice series of the former, which is becoming scarce, and larvæ of the latter]. *Ent. Rec.*, Dec. 15th, 1890, p. 260.
- GEO. A. BOOTH. Furness.
Celæna haworthii [on ragwort-flowers in the day-time, at Grange-over-Sands]. *Ent. Rec.*, Dec. 15th, 1890, p. 261.
- [B. A.] BOWER. Durham.
[Exhibition of Scardia picarella, bred from fungus collected in Durham in May 1870]. *Proc. Ent. Soc. Lond.*, July 2nd, 1890, p. xxi.; *E. M. M.*, Aug. 1890, p. 225; *Ent.*, Aug. 1890, p. 265; *Zool.*, Aug. 1890, p. 320.
Cumberland, Durham, York N.E. and Mid W.,
Derbyshire, Lanc. W. and S., Cheshire.
- C. A. BRIGGS. Cheshire.
The Blown-over Theory [of the occurrence of *Deilephila galii* in Britain, discussed, with references to Wallasey, Hartlepool, Scarborough, Manchester, Carlisle, Derbyshire, Rossall, Harrogate, and Preston occurrences in 1888]. *Young Nat.*, Jan. 1890, pp. 2-4.
- C. H. BRIGGS. Cheshire.
On the Probable Origin of Deilephila galii [argued at length; Wallasey records used]. *Young Nat.*, April 1890, pp. 73-74.
- BRIGHT [of Bournemouth]. York S.W.
[Exhibition of splendidly suffused varieties of Venusia cambricaria from Sheffield]. *South Lond. Ent. Soc.*, Sep. 25th, 1890; *Ent. Record*, No. 7, Oct. 15th, 1890, i. 191.
- E. J. BUCKELL. Notts.
[Exhibition of five Selenia lunaria (bred from Nottingham pupæ) some of which appeared intermediate between this and S. illustraria, and a male with normal coloration of female]. *City of Lond. Ent. Soc.*, 20th Nov., 1890; *Young Nat.*, Dec. 1890, p. 224.
- A. H. BURTT. York N.E.
Colias edusa near Scarborough [one at Westwood, 15th Sep., 1889]. *Nat.*, Nov. 1889, p. 352.
- [J. T.] CARRINGTON. York.
[Spilosoma lubricipeda var. radiata and its increase in the York district]. *South Lond. Ent. Soc.*, April 24th, 1890; *E. M. M.*, June 1890, p. 165; *Ent.*, June 1890, p. 207; *Young Nat.*, June 1890, p. 109.
- T. A. CHAPMAN. Lancashire and Yorkshire Moors.
The Genus Acronycta and its Allies [*A. (Viminia) menyanthidis* occurs on the moors of Lancashire and Yorkshire]. *Ent. Record*, Sep. 15th, 1890, p. 145.

- H. S. CLARKE. Isle of Man.
Dianthæcia capsophila [in the Isle of Man, at Port Jack; particulars of quick emergence]. Yn Lioar Manninagh, Oct. 1889, p. 109.
- HENRY SHORTRIDGE CLARKE. Isle of Man.
Report of the Entomological Section [of the Isle of Man N. H. S.; noting Manx captures of *Pieris brassicæ*, *P. rapæ*, *P. napi*, *Lycæna phlæas*, *Polyommatus alexis*, *Chortobius pamphilus*, *Pararge megera*, *Vanessa urtica*, *V. cardui*, *V. atalanta*, *V. io*, *Colias edusa* (one at Laxey, 18th Sep., 1889), *Dianthæcia cæsia*, *D. capsophila*, *Cirrædia xerampelina* var. *unicolor*, *Xylophasia polyodon*, *Triphæna pronuba*, *Mania maura*, *Amphipyra tragopogonis*, *Sphinx ligustri*, *S. convolvuli*, *Dicranura vinula*, *Smerinthus populi*, and *S. ocellatus*; localities, dates, and details given]. Yn Lioar Manninagh, Jan.-April 1890, pp. 158-160.
- H. SHORTRIDGE CLARKE. Isle of Man.
The Larvæ of the Eyed Hawk Moth [(*Smerinthus ocellatus*) taken near Cranstal Lock, Kirk Bride, Isle of Man; particulars given; *Acherontia*, *Sphinx convolvuli*, *S. ligustri*, *Macroglossa stellatarum*, *Smerinthus populi*, *Chærocampa porcellus*, and *Deilephila galii* also enumerated as seen or taken in the Island by the writer]. Back Trans. I. of Man N. H. S., i. 92-93; published with Yn Lioar Manninagh, No. 6, July 1890.
- H. SHORTRIDGE CLARKE. Isle of Man.
Dianthæcia Capsophila emerging in Autumn [giving Manx experience]. Young Nat., Nov. 1890, p. 213.
- H. SHORTRIDGE CLARKE. Isle of Man.
Notes of the Season (Lepidoptera) . . . Isle of Man [anent *Triphæna pronuba* and *Agrotis exclamationis* being the only results of June sugaring at Tromode; season good for *Dianthæcia cæsia* and *D. capsophila*, poor for *Cirrhædia xerampelina*]. Ent. Rec., Nov. 15th, 1890, p. 209.
- H. SHORTRIDGE CLARKE. Isle of Man.
Dianthæcia capsophila [in the Isle of Man; notes on pupation]. Ent. Rec., Dec. 15th, 1890, p. 262.
- J. COLLINS. Cheshire.
Hydræcia petasitis at Warrington [locality particularised]. Young Nat., June 1890, p. 116.
- J. COLLINS. Lanc. S.
Spring Notes [for 1890, at Rixton Moss, near Warrington; *Asphalia flavicornis* not seen; *Tæniocampa incerta*, *T. stabilis*, *T. gothica*, and *Cerastis vaccinii* noted]. Ent. Record, June 15th, 1890, p. 62.
- J. COLLINS. Lanc. S. or Cheshire.
Notes on Xanthia cerago and X. silago [as observed near Warrington; *Leucania lithargyria*, *L. pallens*, *L. impura*, *Apamea fibrosa*, *Noctua baja*, *N. augur*, *Triphæna comes*, *Apamea didyma* (*oculea*), and *N. xanthographa* also occur]. Ent. Record, June 15th, 1890, p. 68.
- J. COLLINS. Lanc. S. or Cheshire.
Apamea gemina var. *remissa* [captured near Warrington (county not indicated), three in 1888, two in 1890]. Ent. Record, Aug. 15th, 1890, p. 128.
- J. COLLINS. Lanc. S. or Cheshire.
Notes of the Season (Lepidoptera) . . . Warrington [larvæ of *Agrotis agathina* taken in plenty]. Ent. Record, Aug. 15th, 1890, p. 128.
- J. COLLINS. Lancs. S. or Cheshire.
Variety of Arctia caia [bred near Warrington; description given]. Ent. Record, Aug. 15th, 1890, p. 128.

- J. COLLINS. Lanc. S., Cheshire.
Notes of the Season (Lepidoptera) . . . Warrington [*Hadena adusta*, *H. suasa*, *Apamea unanimitis*, *Leucania comma*, *Mamestra anceps*, *Cænonympha davus*, *Aspilates strigillaria*, *Hyria auroraria*, *Lithosia mesomella*, *Viminia menyanthidis*, *Euthemonia russula*, *Cuspidia leporina*, *Nemeophila russula*, *Cynatophora duplaris*, and at Rixton Moss *Bombyx callunæ*]. Ent. Record, Aug. 15th, 1890, p. 130.
- J. COLLINS. Lanc. S. or Cheshire.
Time of Appearance of *Plusia festucae* [near Warrington; odd specimens in June]. Ent. Record, Aug. 15th, 1890, p. 138.
- J. COLLINS. Lanc. S.
Capture of *Lithosia molybdeola* [some miles from Manchester; particulars given]. Ent. Record, Sep. 15th, 1890, p. 154.
- J. COLLINS. Lanc. S. or Cheshire.
Notes of the Season . . . Warrington [*Orthosia suspecta* sugared for in vain at Rixton Moss; *Agrotis agathina* bred]. Ent. Rec., 15th Sep., 1890, p. 161.
- JOS. COLLINS. Lanc. S.
Lithosia sericea [at a place near Manchester; a 'nice series' obtained]. Young Nat., Oct. 1890, p. 199.
- JOS. COLLINS. Lanc. S. or Cheshire.
Agrotis agathina [near Warrington; details of breeding]. Young Nat., Oct. 1890, p. 200.
- J. COLLINS. Lanc. S., Cheshire.
Local Forms of *Cænonympha davus* [from the Manchester mosses, Hartford, and Kirkby]. Ent. Record, Oct. 15th, 1890, p. 176.
- J. COLLINS. Lanc. S. or Cheshire.
Larvæ beating near Warrington [produced *Acronycta leporina*, *Notodonta dromedarius*, *N. camelina*, *Hadena pisi*; and netting produced *Celana haworthii*: number of specimens stated]. Young Nat., Nov. 1890, p. 212.
- J. COLLINS. Cheshire.
Black Variety of *Aplecta nebulosa* [bred from a larva picked up in Delamere district]. Ent. Rec., Dec. 15th, 1890, p. 241.
- J. COLLINS. Lanc. S. or Cheshire.
Viminia rumicis* var. *salicis [six captured at sugar, June 1890, presumably near Warrington]. Ent. Rec., Dec. 15th, 1890, p. 242.
- J. COLLINS. Cheshire.
Variety of *Leucania lithargyria* [from Delamere; described]. Ent. Rec., Dec. 15th, 1890, p. 242.
- WALTER COPLEY. York Mid W.
[Lepidoptera observed by] the Yorkshire Naturalists' Union at Harrogate [13th July, 1889; *Satyrus janira*, *Camptogramma bilineata*, *Cidaria fulvata*, *Eubolia mensuraria*, *Tanagra cherophyllata*, *Hydræcia nictitans*, *Xylophasia sublustris*, *Triphaena pronuba*, *Hydrocampa nymphæalis*, and *Scopula lutealis* noted]. Nat., Aug. 1889, p. 237.
- WALTER COPLEY. York S.W.
***Deilephila galii* at Sowerby Bridge** [a fine male, 12th Aug. 1889]. Nat., Sep. 1889, p. 278.
- B. H. CRABTREE. Lanc. S., Cheshire, Northd. S., Durham.
***Deilephila livornica* near Manchester** [one taken by Herbert Massey at Burnage, June 15th, 1878; editor cites records for specimens same year at Knutsford, Morpeth, Hartlepool, etc.]. Ent., June 1890, p. 203.

- C. G. CRELLIN. Isle of Man.
 "Privet Hawk Moth" [*Sphinx ligustri*] and the Elephant Hawk Moth (*Charocampa elpenor*) have occurred as larvæ at Orrysdale, and have been reared]. *Yn Lioar Manninagh*, Oct. 1889, p. 111.
- C. W. DALE. Yorksh'ire.
British Butterflies [*Papilio machaon* in Yorkshire previous to 1819]. Supplement to *Young Nat.*, Jan. 1890, p. xxxvi.
- C. W. DALE. Durham, York.
The History of our British Hawk-Moths [*Ino geryon* given as occurring as far N. as co. Durham]. *Young Nat.*, June 1890, Appendix, p. 4. [*Zygena lonicera* var. *eboraci* Prest, near York, its relationship discussed]. *Young Nat.*, Oct. 1890, Appendix, p. 11.
- JOSEPH BURTT DAVY. Linc. N.
Entomological Exhibition at Alford, Lincs. [with mention of Lincolnshire examples of *Catocala fraxini*, *Colias edusa*, *Melitæa artemis*, *Melanagria galathea*, *Vanessa polychloros*, *V. antiopa*, *Acherontia*, *Sphinx convolvuli*, *Deilephila galii*, *Dasychira fascelina*, with localities and dates]. *Nat.*, May 1890, p. 15c.
- W. DAWS. Notts.
Tephrosia biundularia var. *delamerensis* in Nottingham[shire, near Mansfield, one locality; details given]. *Ent. Record*, May 15th, 1890, p. 34.
- W. DAWS. Notts.
Euchlœe cardamines var. [near Mansfield, May 28th, a male; description given]. *Ent. Record*, July 15th, 1890, p. 98.
- W. DAWS. Notts.
Var. of Smerinthus ocellatus [at Mansfield, June 21st, 1890; male; described]. *Ent. Record*, July 15th, 1890, p. 98.
- W. DAWS. Notts.
Retarded Emergences [of *Bombyx quercus*, *Eupithecia togata*, and *Pygæa bucephala* near Mansfield]. *Ent. Record*, July 15th, 1890, p. 109.
- JAMES DIXON. Durham.
Pieris brassicæ pupæ lying over [presumably at West Hartlepool]. *Young Nat.*, Oct. 1890, p. 199.
- R. DUTTON. York Mid W.
Notes of the Season.—Lepidoptera [at Bishop's Wood; *Asthena luteata*, *A. candidata*, *Eupisteria heparata*, *Cidaria silaceata*, *Abraxas ulmata*, *Platypteryx falcula*, *Argynnis euphrosyne*, *Tamocampa populeti*, and *Tethea subtusa* noted]. *Ent. Record*, July 15th, 1890, p. 100.
- JOHN W. ELLIS. Cheshire, Lanc. S. and W., Furness.
The Lepidopterous Fauna of Lancashire and Cheshire [a full and detailed series of papers, in which are enumerated 48 butterflies, 25 sphinges, 66 bombyces (incl. cuspidates and a few noctuæ)]. *Nat.*, Feb. and March 1885, pp. 163-173, March, p. 183, Feb. 1886, pp. 50-54, April, pp. 103-111. [The concluding instalment includes 465 Tineina, 11 Micropterygina and 20 Pterophorina and Alucitina]. *Nat.*, Feb. and March 1890, pp. 49-86. [Middle instalments already bibliographed].
- C. FENN. Cheshire.
Gas-Lamp Entomology [criticising J. Arkle's Chester experience as to *Diurnea sagella*, *Lemnatothila phryganella* and *Tortricodes hyemana*]. *Ent.*, April 1890, p. 135.
- [C.] FENN. Durham.
[Exhibit of Scoparia ambigualis, including one var. curzoni, from Darlington]. *South Lond. Ent. Soc.*, Sep. 11th, 1890; *Ent. Rec.*, Sep. 15th, 1890, p. 166.

- C. FENN. Durham.
 [Exhibition of Darlington Specimens of *Eupithecia satyrata*, *Eudorea ambigualis* and *Tortrix viburnana*]. Proc. Ent. Soc., London., Sep. 3rd, 1890; Ent. Rec., Sep. 15th, 1890, p. 168; Zool., Oct. 1890, p. 396; E. M. M., Oct. 1890, p. 276; Ent., Oct. 1890, p. 325.
- C. FENN. York.
 [Exhibition of Dark Varieties of *Cidaria immanata* from York]. South Lond. Ent. Soc., Sep. 25th, 1890; E. M. M., Nov. 1890, p. 306; Ent., Nov. 1890, p. 351; Young Nat., Nov. 1890, p. 208.
- HILDERIC FRIEND. Cumberland.
 The Hornet Clear-wing [(*Sesia apiformis*) near Carlisle; detailed account of its being reared]. Young Nat., July 1890, pp. 133-134.
- W. A. GAIN. Notts.
Acherontia atropos in Notts. [larvæ unusually abundant this year about Tuxford]. Nat., Nov. 1889, p. 352.
- W. A. GAIN. Notts.
 Notes on *Acherontia atropos* [and its life history, as observed at Tuxford, near Newark, where the larvæ were abundant in 1889]. Sci. Goss., Jan. 1890, p. 15.
- JOHN GARDNER. Durham.
 Deferred Emergence [of *Acronycta leporina*; one emerged 4th June, 1890, from two larvæ found in 1888 at Cole Hill near Hutton Henry]. Young Nat., July 1890, p. 134.
- JOHN GARDNER. York N.E.
 [Lepidoptera observed by] The Yorkshire Naturalists' Union at Kildale-in-Cleveland [12th July, 1890; *Satyrus janira*, *Cænonympha pamphilus*, *Eupisteria heparata*, *Asthena luteata*, *A. candidata*, *Emmelesia alchemillata*, *Larentia didymata*, *L. pectinitaria*, *Lomaspilis marginata*, *Acidalia aversata*, *Tanagra chærophyllata*, *Hypena proboscidalis*, *Eudorea conspiciualis*, *E. ambigualis*, *Æcophora stipella*, *Gracilaria syringella*, *Argyresthia gædartella*, *A. sorbiella*, *A. nitidella*, *Pepilla curtisella*, *Bactra lanceolana*, *Tortrix viridana*, *T. heparana*, *Coleophora cespitiella*, and *Dasycera oliviella* noted, the last being stated to be new to the Yorkshire list, but see erratum in Nat. for April 1891, p. 118, where Mr. Gardner says the specimen turned out to be *Adela degeerella* female; reference is also made to the richness of the district, and to T. Meldrum's captures of *Cerura bicuspis*, *Trichiura cratagi*, and *Cleora lichenaria* between Ayton and Stokesley]. Nat., Sept. 1890, p. 272.
- T. GIBBS, Jun. Derbyshire, Notts.
 Calendar of Nature for 1882 [at Bretby, near Burton-on-Trent; dates given for *Hybernia rupicapraia*, *H. leucophæaria* (Repton Shrubs), *Phigalia* (Repton Shrubs), *Vanessa urticae*, five *Teniocampa*, *Scopelosoma satellitia*, *Brephos parthenias* (Repton Shrubs), *Anticlea derivata*, *A. badiata*, *Melanippe fluctuata*, *Cidaria suffumata*, *Cilix spinula*, *Coremia propugnata*, *C. unidentata*, *Pieris napi*, *Melanippe subtristata*, *Tephrosia crepuscularia* (the three in Bretby Park), *Asthena blomeraria* (Hoofies Wood), *Pieris napi*, *Anthocharis*, *Lycæna argiolus*, *Panagra petrararia* (the four in Parson's Brake), *Melanippe montanata*, *Abraxas ulmata* (Hoofie's Wood), *Amphidasis betularia* (Repton Shrubs), *Emmelesia affinitata*, *Pygæra*, *Euchelia jacobæe*, *Eupithecia lariciata* (Bretby Park), *Emmelesia alchemillata*, *Cerura bifida*, *Apamea basilinea* (the three in Hoofie's Wood), *Acronycta psi*, *Eup. vulgata*, *Xylophasia rurea*, *Hepialus vellela*, *Plusia gamma*, *Noctua plecta*, *Emmelesia decolorata*, *Hep. humuli*, *Chesias spartiata*, *Diloba cæruleocephala*, *Liparis auriflua*, *Cheimatobia brumata*, *Cabera pusaria*, *Larentia pectinitaria*, *Camptogramma bilineata*, *Himera pennaria*, *Apamea gemina*, *Miana strigilis*, *Mamestra brassicæ*, *Euplexia lucipara*, *Agrotis exclamationis*, *Aplecta herbida*, *Miana fasciuncula*, *Tortrix viridana*, *Triphaena pronuba*, *Pieris brassicæ*, *Abraxas grossulariata*,

Chelonia caja, *Cidaria dotata*, *Acronycta megacephala*, *Urapteryx sambucata*, *Larentia didymata*, *Cidaria pyraliata*, *Acidalia aversata*, *A. bisetata*, *Cosmia trapezina*, *A. scutulata*, *Boarmia rhomboidaria*, *Noctua augur*, *N. brunnea*, *Ypsipetes elutata*. *Plusia iota*, *Scopula lutealis*, *Leucania pallens*, *Mania typica*, *Halia wavaria*, *Miana arcuosa*, *Cidaria fulvata*, *C. immanata*, *Apamea oculea*, *Bryophila perla*, *Argynnis aglaia*, *Cænonympha pamphilus*, *Scotosia dubitata*, *Caradrina cubicularis*, *Xanthia citrigo* (Clumber larvæ), *Amphipyra tragopogonis*, *Phlogophora meticulosa*, *Hadena protea*, *Anchocelis litura*, *A. pistacina*, *Miselia oxyacanthæ*, *Hybernia defoliaria*, *Oporabia dilutata* (Bretby Park), *Calocampa vetusta* and *C. exoleta*]. 7th Ann. Rep. Burton-on-Trent Nat. Hist. and Arch. Soc. for year ending 31st March, 1883, pp. 16-17.

T. GIBBS, Junr.

Derbyshire.

Calendar of Nature, 1883 [at Bretby near Burton-on-Trent; dates given for *Hybernia rupicaprararia*, *H. progemma*, *Phigalia* (Repton Shrubs), *Hyb. leucophæaria* (Repton Shrubs), *Vanessa urticae*, *Pieris rapæ* (Repton Shrubs), *Tæniocampa stabilis*, *T. instabilis*, *T. gothica*, *Anisopteryx æscularia*, *Anticlea badiata*, *Arctia lubricipeda*, *Pieris brassicæ*, *Abraxas ulmaria* (Hoofie's Wood), *Emmelesia affinitata*, *Eup. vulgata*, *Phlogophora meticulosa*, *Melanippe montanata*, *Acronycta psi*, *Asthena blomeraria*, *Cidaria silaceata*, *Venilia maculata* (Miller's Dale), *Melanippe subtristata* (Miller's Dale), *Hadena dentina* (Miller's Dale), *Hepialus velleda* (Decoy), *H. humuli* (Decoy), *Eup. lariciata* (Decoy), *Polyommatus phlæas* (Repton Rocks), *Eupisteria heparata* (Repton Rocks), *Emmelesia albulata* (Repton Rocks), *Ypsipetes impluviata* (Repton Rocks), *Melanthia albicillata* (Decoy), *Scotosia dubitata*, *Vanessa atalanta*, *Plusia gamma*, and *Cheimatobia brumata*]. 8th Ann. Rep. Burton-on-Trent N. H. & Arch. Soc., year ending 31st Dec. 1883, pub. 1884, pp. 22-23.

T. GIBBS, Jun.

Derbyshire, Furness, 'York.,

Report of the Entomological Section [of Burton-on-Trent N. H. and Arch. Soc., mentions the capture of *Scoparia (Eudorea) conspicualis* in Seal Wood, 1883, and Repton Shrubs, 1884; also known for near Windermere (J. B. Hodgkinson), and near York (W. Prest)]. 9th Ann. Rep. Burton-on-Trent N. H. & Arch. Soc. for 1884, publ. 1885, p. 10.

T. G[IBBS, Jun.].

Derbyshire.

Calendar of Nature, 1884 [at Burton-on-Trent; dates given for *Hybernia leucophæaria* (Repton Shrubs), *Vanessa urticae*, *Tæniocampa stabilis*, *T. instabilis*, *T. gothica*, *T. populeti*, *Scopelosoma satellitia*, *Pieris napi* (Bretby), *Cidaria fulvata* (Bretby), *C. immanata* (Bretby), *Leucania lithargyria* (Bretby), *Scopula lutealis* (Bretby), *Noctua xanthographa* (Bretby), *N. rubi*, *Triphena orbona*, *Hydræcia nictitans*, *Amphipyra tragopogonis*, *Scotosia dubitata*, *Agrotis nigricans*, *Noctua baja*, *Vanessa atalanta*, *Agrotis suffusa*, *Triphena fimbria*, *Phlogophora meticulosa*, *Heliophobus popularis* (Bretby), *Agrotis aquilina*, *Noctua c-nigrum*, *Mamestra brassicæ*, *Xanthia ferruginea*, *X. silago*, *Hadena protea*, *Anchocelis litura*, *Hydræcia micacea*, *Miselia oxyacanthæ*, *Orthosia lota* (Bretby), *Cheimatobia brumata* (Bretby), *Oporabia dilutata* (Bretby), *Agriopsis aprilina* (Bretby), *Hybernia defoliaria* (Repton Shrubs), *H. aurantiaria* (Repton Shrubs), and *Cheimatobia boreata* (Repton Shrubs)]. 9th Ann. Rep. B.-on-Trent N. H. & Arch. Soc., for 1884, publ. 1885, pp. 23-25.

T. G[IBBS].

Derbyshire.

Calendar of Nature, 1885 [near Burton-on-Trent; dates given for *Hybernia leucophæaria*, *H. progemma*, *H. rupicaprararia*, *Anisopteryx æscularia* (Repton Shrubs), *Scopelosoma satellitia*, *Tæniocampa stabilis*, *T. cruda*, *T. populeti*, *Cerastis vaccinii*, *T. instabilis*, *T. rubricosa*, *Vanessa urticae*, *Pieris rapæ*, *Melanippe fluctuata*, *Lomaspidis marginata*, *Abraxas ulmaria*, *Cheimatobia boreata*, *Melanippe sociata*, *Coremia propugnata*, *Asthena blomeri*, *Tephrosia biundularia*, *Eup. lariciata*, *Pieris brassicæ*, *Coremia unidentaria*, *Emmelesia affinitata*, *Eup. castigata*, *Rumia*, *Pieris napi*, *Anthocharis*, *Melanippe montanata*, *Apamea basilinea*, *Cabera pusaria*, *Tanagra atrata*, *Metrocampa*, *Aplecta nebulosa*, *Nola cucullatella*, *Hydrocampa stagnata* (Drakelow), *Boarmia repandata*, *Cidaria associata*, *Arctia caja*,

Naturalist,

Noctua augur, *Leucania fallens*, *Apamea didyma*, *Boarmia gemmaria*, *Larentia didymata*, *Cidaria dotata*, *Abraxas grossulariata*, *Ypsipetes elutata*, *Xanthia citrigo*, *Crocallis*, *Cidaria fulvata*, *Scoparia ambigualis*, *Hepialus vellea*, *Odontopera*, *Emmelesia decolorata*, *Hepialus hectus*, *Melanthia albicillata*, *Hep. lupulinus*, *Noctua plecta*, *Agrotis exclamationis*, *Lithostege grisealis*, *Cidaria silacea*, *C. russata*, *Ephyra punctaria*, *Spilosoma menthastri*, *Apamea gemina*, *Grammesia trilinea*, *Xylophasia polyodon*, *Miana strigilis*, *Camptogramma bilineata*, *Scotosia dubitata*, *Uraapteryx sambucaria*, *Triphæna ianthina*, *Triphosa dubitata*, *Vanessa io*, *Plusia gamma*, *Triphæna comes*, *Cilix glaucata*, *Selenia bilunaria*, *Noctua xanthographa*, *Scopula lutealis*, *Hydræcia nictitans*, *Amphipyra tragopogonis*, *Vanessa cardui*, *Nonagria fulva*, *Oporabia dilutata*, *Hybernia aurantiaria*, *Acherontia atropos*]. 10th Ann. Rep. Burton-on-Trent N. H. S. and Arch. Soc. for 1885, publ. 1886, pp. 21-24.

T. GIBBS.

Derbyshire.

Calendar of Nature, 1887 [at Burton-on-Trent ; dates given for *Phigalia* (Repton Shrubs), *Hybernia leucophaearia* (Repton Shrubs), *H. rupicaprararia* (Bretby), *Teniocampa gothica* (Bretby), *T. stabilis* (Bretby), *T. incerta* (Bretby), *T. populeti* (Bretby), *T. cruda* (Bretby), *Melanippe fluctuata* (Bretby), *Hemerophila abruptaria* (Bretby), *Rumia* (Bretby), *Cabera pusaria* (Bretby), *Pygæra* (Ashby Road), *Melanippe sociata* (Bretby), *Emmelesia affinitata* (Bretby), *E. decolorata* (Bretby), *Lomaspilis marginata* (Bretby), *Melanippe montanata* (Hoofie's Wood), *Anthocharis* (Hoofie's Wood), *Asthena blomeri* (Hoofie's Wood), *Abraxas ulmata* (Hoofie's Wood), *Hep. vellea* (Bretby), *Hadena thalassina* (Bretby), *Melanthia albicillata* (Bretby), *Aplecta nebulosa* (Repton Shrubs), *Acidalia bisetata* (Repton Shrubs), *Cidaria immanata* (Repton Shrubs), *Triphosa dubitata* (Bretby), *Melanthia rubiginata* (Bretby), *Abraxas grossulariata* (Bretby), *Cidaria fulvata* (Bretby), *Calymnia trapezina* (Repton Shrubs), *Eugonia quercinaria* (Repton Shrubs), *Noctua xanthographa* (Bretby), *Mania typica* (Bretby), *Hepialus sylvinus* (Bretby Park), *Noctua baja* (Bretby), *Selenia bilunaria* (Bretby), *Noctua umbrosa*, *Apamea oculatea*, *Hydræcia nictitans*, *Xanthia fulvago*, *Triphæna fimbria* (Bretby), *T. interjecta* (Bretby), *Noctua rubi* (Bretby), *Miana literosa* (Bretby), *Vanessa io* (Bretby), *Mania maura*, *Calymnia affinis*, *Vanessa atalanta* (Repton Shrubs), and *Polia chi* (Bretby)]. Ann. Rep. Burton-on-Trent N. A. & Arch. Soc. for 1887-88, publ. 1888, pp. 31-32.

THOMAS GIBBS.

Derbyshire.

The Influence of Temperature on the Progress of Vegetation in the early months of the year [discussed, and table given which includes the average, earliest and latest dates on which *Hybernia rupicaprararia*, *Vanessa urticae*, *Pieris rapæ*, *Anthocharis*, and *Rumia*, were seen in the Burton-on-Trent district]. Trans. B.-on-Trent Nat. Hist. & Arch. Soc., vol. i, 1889, p. 81.

W. HOWARD GOULTY,

Westmorland and Furness.

Notes from Lancashire [i.e., Furness and Westmorland; *Nemeobius lucina*, *Leucophasia sinapis*, *Lycæna argiolus*, *Anarta myrtilli*, and *Saturnia carpiui*, at Grange-over-Sands]. Ent., Dec. 1890, p. 385.

C. S. GREGSON.

Derby, Durham, Chesh., Lanc. S., Cumb., York S.W.

Deilephila galii [giving results of personal experience, and mentioning Derby, Wolsingham, Staley Bridge, Bolton, Warrington, Wallasey as localities, also Maryport, Cumberland, and Potter Hill near Wharnccliffe, Yorkshire, as places where it was obtained every year in years gone by]. Young Nat., Dec. 1890, pp. 229-231.

C. S. GREGSON.

Lanc. S.

Nyssia Zonaria at Wallasey [only found by one person last spring ; writer quite unsuccessful]. Young Nat., Dec. 1890, p. 235.

J. GRIME.

Lanc. S.

Plusia festucae near Bolton [formerly in great numbers, but now rare, from attacks by collectors ; *Celena harworthii* plentiful this September]. Ent. Rec., Nov. 15th, 1890, p. 214.

June 1893.

- A. E. HALL. York S.W., Notts.
Euperia fulvago at Sheffield [close to town, darker than either Doncaster or Sherwood examples]. Ent. Record, April 15th, 1890, p. 20.
- A. E. HALL. York S.W.
Notes on the Early Season [of 1890 near Sheffield; anent *Phigalia*, *Anisopteryx*, *Hybernia progemmaria*, *Cymatophora flavicornis*, *Pieris rapæ*, *Nyssia hispidaria*, *Tephrosia crepuscularia*, *Teniocampa rubricosa*, and *Tortricodes hyemana*, with their dates of appearance]. Ent. Record, April 15th, 1890, p. 22.
- A. E. HALL. York S.W.
Hypsipetes sordidata [its variation and food-plants near Sheffield]. Ent., June 1890, p. 203.
- A. E. HALL. York S.W. or Derbyshire.
Spring Notes [near Sheffield: *Brephos parthenias* fairly common; time of flight described]. Ent. Record, June 15th, 1890, p. 64.
- A. E. HALL. York S.W.
Habits of Tortrix forsterana (adjunctana) [plentiful in Sheffield garden]. Ent. Record, June 15th, 1890, p. 65.
- A. E. HALL. York S.W.
Small Specimen of A[nthocharis]. cardamines [near Sheffield, 24th May, 1½ inch from tip to tip]. Young Nat., July 1890, p. 133.
- A. E. HALL. York S.W.
Small Variety of Euchlœe cardamines [near Doncaster, 24th May; 1½ inch from tip to tip]. Ent. Record, July 15th, 1890, p. 98.
- A. E. HALL. York S.W.
Small Example of Tephrosia biundularia [taken by Geo. Rose near Barnsley, June 1887, measured only *half an inch* from tip to tip; see Young Nat., viii. 181]. Ent., Aug. 1890, p. 261.
- A. E. HALL. Notts, York S.W.
Notes of the Season (Lepidoptera).— **Worksop** [*Eupithecia lariciata* common near Worksop, June 7th, 1890; *Asphalia fluctuosa* scarce]. Ent. Record, Aug. 15th, 1890, p. 129.
- A. E. HALL. Notts.
A Week at Sherwood Forest [in August; *Noctua dahlia*, *Euperia fulvago*, *Amphipyra pyramidea* (absent), *Noctua glareosa*, *Triphæna fimbria*, *Agrotis tritici*, *Hyaræcia nictitans*, *Cidaria testata*, *Luperina cespitis*, *Chareas graminis*, *Ephyra punctaria*, *E. pendularia*, *Tephrosia punctulata*, *Cymatophora duplaris*, *Eupithecia absinthiata*, and *E. centaureata* noted]. Ent., Oct. 1890, pp. 321-322.
- A. E. HALL. Notts.
Noctua Dahlia [at Sherwood Forest, where everything was scarce but this]. Young Nat., Oct. 1890, p. 200.
- A. E. HALL. ? York S.W.
Variety of Rumia Cratægata [with a rich brown suffusion on the right wing, bred]. Young Nat., Oct. 1890, p. 200.
- A. E. HALL. York S.W.
Notes on some Macro-Lepidoptera, usually of common occurrence, but rare in the neighbourhood of Sheffield [viz. three of *Pieris*, *Anthocharis*, *Vanessa urticae*, *V. atalanta*, *V. cardui*, *Satyrus janira*, *S. hyperanthus*, *Cænonympha pamphilus*, *Lycæna alexis*, *Hesperia sylvanus*, *Vanessa io*, *Satyrus egeria*, *S. megæra*, *S. tithonus*, *Polyommatus phleas*, *Euchelia jacobææ*, *Chelonia caja*, *Arctia fuliginosa*, *A. mendica*, *Liparis auriflua*, *Orgyia antiqua*, *Bombyx neustria*, *Dicranura vinula*, *Pygæra bucephala*, *Diloba ceruleocephala*, *Bryophila perla*, *Leucania conigera*, *L. impura*, *Hydræcia nictitans*, *H. micæa*, *Xylophasia lithoxylea*, *X. hepatica*, *Apamea basilinea*,
Naturalist,

Miana strigilis and vars. *æthiops* and *præduncula*, *M. fasciuncula*, *M. literosa*, *M. furuncula*, *Grammesia trilinea*, *Triphæna orbona*, *Anchocelis pistacina*, *Agriopsis aprilina*, *Phlogophora meticulosa*, *Euplexia lucipara*, *Hadena chenopodii*, *H. adusta*, *H. protea*, *H. pisi*, *Plusia chrysitis*, *Urapteryx sambucata*, *Selenia illunaria*, *Boarmia rhomboidaria*, *Acidalia scutulata*, *A. bisetata*, *A. incanaria*, *A. aversata*, *Abraxas grossulariata*, *Hybernia leucophæaria*, *Camptogramma bilineata*, *Eubolia cervinaria*, *E. palumbaria*, *Tanagra cherophyllata*, all described as more or less scarce, and some as nearly extinct; attributed to prevalence of manufactures and noxious vapours, but no allusion is made as to the unfavourable lithological character of such a district]. Ent. Rec., Dec. 15th, 1890, pp. 256-258.

JAMES HARDY.

Cheviotland.

Report of the Meetings of the Berwickshire Naturalists' Club for the year 1889 (with note of *Euchelia jacobæ* on Bamburgh sand-hills]. Proc. Berw. Nat. Club for 1889, vol. 12, No. 3 (pub. 1890), p. 498.

G. A. HARKER.

Lanc. S. or Cheshire.

Hybernia marginaria (progemmaria) var. fuscata [common near Liverpool and emerges a little later than the type]. Ent. Record, June 15th, 1890, p. 59.

G. HARKER.

Lanc. S., Cheshire.

Notes of the Season (Lepidoptera).— . . . **Liverpool** [*Melanippe galiata* and *Bombyx trifolii* at Crosby; *Mamestra albicolon* plentiful, *Rhodaria sanguinalis* just appearing]. Ent. Record, Aug. 15th, 1890, p. 130.

J. HARRISON.

York S.W.

Autumn Notes . . . Barnsley [*Penthina sauciana* and *Hypsipetes elutata* in profusion on the moors, *Cloantha solidaginis* and *Oporabia filigrammaria* taken]. Ent. Rec., Dec. 15th, 1890, p. 252.

R. C. HEDLEY.

Northumberland S.

[Puss Moth Caterpillars (*Dicranura vinula*) occur at Hallington Reservoir]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. 10, part 2, 1890, p. 399.

WILLIAM HEWETT.

York N.E.

Epione parallelaria [vespertaria] var. [dark uniform brick-red, with usual border; taken near York along with type; editor adds that it is more commonly bred]. Ent., Jan. 1890, p. 19.

W. HEWETT.

York District?

Variation in *Zygæna loniceræ* [as observed presumably near York; 15 varieties noted, three of which are named—vars. *semilutescens*, *lutescens*, and *eboracæ* Prest.]. Ent. Record, June 15th, 1890, pp. 59-60.

W. HEWETT.

York N.E.

Notes of the Season (Lepidoptera).— . . . **Kildale** [*Larentia cæsiata* and *Melanippe tristata* abundant]. Ent. Record, Aug. 15th, 1890, p. 132.

W. HEWETT.

'York.'

Notes of the Season (Lepidoptera).— . . . **York** [*Cuspidia leporina*, *Agrotis exclamations*, *Miana strigilis*, *Apamea didyma*, *Nylophasia fo'yodon*, *Triphæna pronuba*, three *Plusie*, *Collix*, *Chortodes arcuosa*, *Geometra papilionaria* and *Epione vespertaria*]. Ent. Record, Aug. 15th, 1890, p. 132.

JOHN F. HILLS, Secretary.

Lanc. S.

Penketh School Field Club [several *Smerinthus fo'uli* captured on the premises]. N. H. J., June 15th, 1890, p. 91.

J. B. HODGKINSON.

Lanc. W. and Westmorland or Furness.

Two Species of Micro-Lepidoptera new to the British List [*Retinia margarotana* H. S., one, in fine condition, taken off Scotch firs on the moors above Stoneyhurst in June 1879; and *Bryotropha (Gelechia) obscurella* Hein., two fine examples taken July 5th, 1887, near Windermere College]. Ent., April 1890, p. 119.

- J. B. HODGKINSON. Westmorland, Furness, Lanc. W. & S.
Notes on the Season 1889 [at Windermere, Stoneyhurst, Arnside, and Ashton-on-Ribble; *Laverna lacteella*, *L. paludicolella*, *Nepticula gei*, *N. splendidissimella*, *N. aucuparia*, *N. tityrella*, *N. continuella*, *N. tiliæ*, *N. desperatella*, *N. minusculella*, *Lithocolletis kleemannella*, *L. stettinensis*, *L. bistentella*, *Cabera rotundaria*, *Penthina capreana*, *Nepticula intimella*, *Hadena glauca*, *Acronycta menyanthidis*, *Nemophora pilella*, *Gelechia longicornis*, *Thecla rubi*, *Cænonympha typhon*, *Hyria muricata*, *Acidalia fumata*, *Lycena astrarche* var. *salmiacis*, *Cidaria reticulata*, *Penthina postrema*, *Coleophora fusco-cuprella*, *Eupithecia satyrata*, *Penth. sauciana*, *Grapholitha geminana*, *Nep. cryptella*, *N. serella*, *Coleophora fusco-cuprella*, and *Ephestia semirufa*]. Ent., April 1890, pp. 138-139.
- J. B. HODGKINSON. Lanc. W.
Notes of the Season . . . Dutton [*Retinia margarotana*, *Amphisa gerningana*, *Penthina sauciana*, *Pedisca occultana*, *Peronea caledoniana*, *Plusia interrogationis*, *Trifurcula pallidella*, *Phygadeuonella bisontella*, *Grapholitha geminana*, *Crambus margaritellus*, *Carsia imbutata*, *Gelechia similella*, noted]. Ent. Rec., Sep. 15th, 1890, p. 160.
- J. B. HODGKINSON. Westmd., Furness, and Lanc. W.
Notes on the Season [at Ashton-on-Ribble and Windermere; *Nepticula sorbiella*, *N. hodgkinsonii*, *Trifurcula pulverosella*, *N. floslactella*, *N. aucupariæ*, *N. ignobilella*, *N. lapponica*, *N. splendidissimella*, *N. gei*, *N. malella*, *N. desperatella*, *N. tiliæ*, *B. hippocastanella*, *N. ruficapitella*, *N. salicis*, *N. poterii*, *N. argentipedella*, *N. betulicola*, *N. plagicolella*, *N. angulifasciella*, *N. serella*, *N. luteella*, *Coccyx scopariana*, *Penthina postrema*, *Coccyx vacciniæ*, all bred; *Micropteryx salopiella*, *M. sparmannella*, *Catoptria aspidiscana*, *Panacalia lewenhoekella*, *Nept. woolhopiella*, *N. argentipedella*, *Trycheris aurana*, *Euplexia lucipara*, *Cecophora flavimaculella*, *Ornix anglicella*, *Lithocolletis cavella*, and at Windermere the following:—*Cidaria corylata*, *Melanthia albicillata*, *Eupithecia plumbeolata*, *Hylophila prasinana*, *Micropteryx mansuetella*, and *Cidaria reticulata*]. Ent., Oct. 1890, pp. 323-325.
- PETER INCHBALD. York S. E.
Acherontia atropos in 1889 [a batch of larvæ at Hornsea; their rearing described in detail]. Ent., Jan. 1890, p. 16.
- J.] JÄGER. Isle of Man, Cumberland.
[Exhibition of Manx *Dianthæcia capsophila* and a very dark *D. cæsia*]. South Lond. Ent. Soc., July 10th, 1890; Ent. Record, July 15th, 1890, p. 120; E. M. M., Aug. 1890, p. 224; Ent., Aug. 1890, p. 266.
- J. JÄGER. Isle of Man, Cumberland.
Notes of the Season (Lepidoptera) . . . Isle of Man [anent *Polyommatus phleas*, *Lycena icarus*, *Satyrus semele*, *Pararge megera*, *Vanessa urticæ*, *Pieris* (3 species), *Larentia salicata*, *Melanippe fluctuata*, *Eubolia cervinaria*, *Scotosia dubitata*, *Boarmia repandata*, *Eup. constrictata*, *Cidaria russata*, *C. immanata*, *Luperina testacea*, *L. cespitis*, *Anchocelis lunosa*, *Xylophasia polyodon*, *Epunda lichenea*, *Noctua xanthographa*, *N. glareosa*, *Amphipyra tragopogonis*, *Caradrina cubicularis*, *Agrotis tritici*, *A. velligera*, *Miana literosa*, *Tryphena orbona*, *T. interjecta*, *Hydræcia micæa*, *Chlogophora meticulosa*, *Agrotis præcox*, *A. pyrophila*, *Stilbia anomala*, *Cirrhædia xerampelina*, all near Ramsey, *Cidaria populata* and *Chariæa graminis* at top of Snaefell, 2,000 feet alt., *Abraxas ulmata* in Glen Helen, *Smerinthus populi*, *Arctia fuliginosa* and *Agrotis ripe*, but the last not so common as last year on the coast of Cumberland]. Ent. Record, Oct. 15th, 1890, pp. 181-182.
- [J.] JÄGER. Isle of Man.
Exhibition of Manx Examples of *Epunda nigra*, *Stilbia anomala*, *Agrotis tritici*, *A. pyrophila* and *Cirrhædia xerampelina*; a few details given]. South Lond. Ent. Soc., 25th Sep., 1890; Young Nat., Nov. 1890, p. 208; E. M. M., Nov. 1890, p. 306; Ent., Nov. 1890, p. 351.

- WILLIAM JOHNSON. Lanc. S.
Arctia caja [account of a breeding of varieties at Aspull near Wigan].
 Ent., April 1890, p. 134.
- JOY. Lanc. S.
 [Plusia festucae had a June brood at Manchester]. South Lond. Ent.
 Soc., 28th Aug. 1890; Young Nat., Sep. 1890, p. 178.
- P. M. C. KERMODE. Isle of Man.
Manks Butterflies, with some notes by the late E. Birchall, F.L.S.,
 and Remarks [enumerating 22 species, with remarks]. Back Transactions of
 I. of M. N. H. S., i. 49-51; publ. with Yn Lioar Manninagh, July 1889.
- P. M. C. K[ERMODE]. Isle of Man.
Phenological Observations [made in the Isle of Man, giving date for
Arctia caja]. Yn Lioar Manninagh, July 1889, p. 85.
- P. M. C. KERMODE. Isle of Man.
Address by the Retiring President . . . Delivered . . . March 11,
 1886 [gives titles of papers dealing with the Manx Fauna]. Back Trans.
 I. of Man N.H.S., i. 72; publ. with Yn Lioar Manninagh, No. 4, Oct. 1889.
- P. M. C. KERMODE [not signed]. Isle of Man.
Elephant Hawk Moth [(*Chærocampa elpenor*); records of two near Ramsey,
 at intervals of ten years; details given]. Yn Lioar Manninagh, July 1890,
 p. 180.
- E. P. K[NUBLEY, Secretary]. York S.E.
The Yorkshire Naturalists' Union at Kirkham Abbey and Acklam
 Brow [4th Sep. 1889; *Polyommatus alexis* noted]. Nat., Nov. 1889, p. 342.
- W. LAIDLAW. Cheshire.
[Large Sphinx convolvuli captured at Oxton in autumn 1889, exhibited].
 Lanc. & Chesh. Ent. Soc., March 10th, 1890; Young Nat., April 1890, p. 70.
- J. H. LEECH. Cheviotland.
Collecting on the Northumberland Coast [at Alnmouth; *Lycæna icarus*,
Cidaria immanata, *Eubolia mensuraria*, *Melanippe montanata*, *Larentia*
didymata, *Leucania pallens*, *L. impura*, *L. straminea*, *L. lithargyria*, *Apamea*
fibrosa, *Miana furuncula*, *Cerigo cytherea*, *Agrotis velligera*, *A. tritici*,
Triphena orbona, *T. subsequa*, *T. pronuba*, *Noctua baja*, *N. umbrosa*,
N. xanthographa, *Cleoceris viminalis*, and *Xylophasia polyoanon*, mostly in
 interesting varieties captured in four days]. Ent., Sep. 1890, p. 292.
- MACHIN. York S.W.
[Exhibition of Arctia mendica from Huddersfield]. City of Lond. Ent.
 Soc., 16th Oct. 1890; Young Nat., Nov. 1890, p. 208.
- T. MADDISON. Durham.
Lycæna medon var. salmacis [at Castle Eden]. Ent. Record, July 15th,
 1890, p. 97.
- T. MADDISON. Durham.
Notes of the Season . . . Durham [anent *Lycæna salmacis*, *L. alexis*,
Procris geryon, *Arctia caja*, *A. villica*]. Ent. Rec., Oct. 15th, 1890, p. 179.
- JAS. EARDLEY MASON. Linc. N.
Acherontia atropos Larvæ at Alford, Lincs. [several during Aug. 1889].
 Nat., Sep. 1889, p. 278.
- JAS. EARDLEY MASON. Linc. N.
Apatura iris L [found at Welton Wood in the parish of Welton-le-Marsh,
 near Alford, by E. Woodthorpe]. Nat., Sep. 1890, p. 267.
- JAS. EARDLEY MASON. Linc. N.
Apatura Iris, L. [one taken and three more seen at Welton Wood near
 Alford, 25th July, 1890, by Edwd. Woodthorpe]. E.M.M., Oct. 1890, p. 256.
 June 1893.

[P. B.] MASON.

Durham.

[*Noctua conflua* from Iceland exhibited, whereupon Dr. Mason said the only British specimens he had seen resembling the Icelandic form were four taken at Wolsingham, Durham]. Proc. Ent. Soc. Lond., 5th Nov., 1890; Ent. Rec., Nov. 15th, 1890, p. 219; Ent., Dec. 1890, p. 386; E. M. M., Dec. 1890, p. 332; Young Nat., Dec. 1890, p. 228.

W. MILBURN.

York N.W., Durham?

Notes on the Season (Lepidoptera).— . . . Darlington [*Caradrina cubicularis* and *Bombyx callunæ*, and at Richmond *Sesia culiciformis*]. Ent. Record, Aug. 15th, 1890, p. 133.

S. L. MOSLEY.

York S.W.

[Lepidoptera observed by] The Yorkshire Naturalists' Union at Holmfirth [10th June, 1889; *Pieris rapæ*, *Fidonia atomaria*, *Emmelesia albulata*, *Gelechia ericetella*, *Phoxopteryx myrtillana*, larvæ of *Hybernia progemma*, *Cheimatobia brumata*, *C. boreata*, *Oporabia filigrammaria*, *Larentia didymata*, *Cidaria populata*, and *Notodonta camelina*]. Nat., July 1889, p. 203.

S. L. MOSLEY.

York S.W.

Observations at Anston Stones, May 1889 [*Anthocharis*, *Tephrosia biundularia* (or *crepuscularia*), *Abraxas ulmata*, and *Asthena sylvata* noted]. Nat., Aug. 1889, p. 225.

S. L. MOSLEY.

York S.W.

[Lepidoptera observed by] The Yorkshire Naturalists' Union at Bretton Park, 14th June, 1890; *Eup. pygmaea*, *Melanippe hastata*, *Hybernia defoliaria*, *Pecilocampa populi*, and *Abraxas ulmata*; remarks]. Nat., Aug. 1890, pp. 225-226.

W. NEWMAN.

York N.W.

Notes of the Season (Lepidoptera).— . . . Richmond [27th May, 1890: *Hadena glauca*, *Cidaria silacea*, and *P. raustæ* taken]. Ent. Record, Aug. 15th, 1890, p. 130.

W. NEWMAN.

Durham or York N.W.

Distribution of *Cidaria suffumata* var. *piceata* [abundant in proportion to type near Darlington]. Ent. Rec., Dec. 15th, 1890, p. 239.

R. NEWSTEAD.

Cheshire.

Acherontia atropos in 1889.— . . . Cheshire [larvæ near Frodsham and at Manley]. Ent., Jan. 1890, p. 17.

R. NEWSTEAD.

Cheshire?

Metrocampa margaritaria var. [bred at Chester, July 29th, 1889; all the cilia pale red]. Ent., Jan. 1890, p. 19.

J. E. NOWERS [Sec.].

Derbyshire.

Comparative Calendar of Nature [for 1877, 1878, and 1879, around Burton-on-Trent; dates given for *Vanessa urticae*, *Pieris rapæ*, *Hybernia progemma*, *H. leucophaearia*, *H. rupicapraia*, *Anthocharis*, *Hepialus humuli*, *Teniocampa gothica*, *T. stabilis*, *T. instabilis*, *Rumia Chesias spartiata*, *Abraxas ulmata*, *Acronycta psi*, *Mamestra brassicae*, and *Plusia gamma*]. 4th Ann. Rep. Burton-on-Trent Nat. Hist., etc., Soc., 1880, p. 71.

J. E. NOWERS.

Derbyshire.

Calendar of Nature, 1887 [for Burton-on-Trent; dates given for *Teniocampa rubricosa* (Repton Shrubs), *Cilix spinula* (Drakelow), and *Larentia didymata* (Drakelow)]. Ann. Rep. Burton-on-Trent N. H. & Arch. Soc. for 1887-88, publ. 1888, pp. 31-32.

DOUGLAS H. PEARSON.

Notts.

Amphidasys betularia var. *doubledayaria* in Notts. [at Chilwell, rare; two this year]. Ent., Oct. 1890, p. 319.

- A. PICKARD. York N.W.
 [Lepidoptera observed by] The Yorkshire Naturalists' Union in Upper Teesdale [in Aug. 1889; *Smerinthus populi*, *Dicranura vinula*, *Notodonta dicta*, *N. sicca*, *Hadena pisi*, and *Acronycta menthanyidis* captured on the Yorkshire side of the Tees]. Nat., Sep. 1889, p. 283.
- A. E. PIKE. Cheshire.
 Notes of the Season . . . Wallasey [*Nyssia zonaria*, *Eubolia lineolata*, *Mamestra albicolon*, *Rhodaria sanguinalis*, *Leucania littoralis*, and *Agrotis precox* captured; notes of dates and weather]. Ent. Record, Sep. 15th, 1890, p. 162.
- G. PODMORE. Furness.
Colias edusa in 1889 [a good many near Grange in Aug. and Sept.]. Ent., Jan. 1890, p. 16.
- G. PODMORE. Furness.
Sphinx convolvuli in 1889.— . . . Lancashire [i.e., Furness; four taken at Grange, Aug. 24th, 29th, Sep. 8th, 13th]. Ent., Jan. 1890, p. 18.
- GEORGE T. PORRITT. York S.W.
 [Exhibition of a long series of *Hybernia progemma* to show the increase of melanism at Huddersfield]. Proc. Ent. Soc. Lond., April 6th, 1887, p. xiii.
- [G. T.] PORRITT. York S.W.
 [Exhibition of a series of Melanic Varieties of *Diurnea fagella* from Huddersfield, from which neighbourhood the typical pale form had almost disappeared]. Proc. Ent. Soc. Lond., Oct. 5th, 1887, p. xlv.
- G. T. PORRITT. York S.W.
 Melanism in *Boarmia repandata* [from Huddersfield; specimens shown]. Ent. Soc. Lond., Feb. 1889; Nat., April 1889, p. 100.
- GEO. T. PORRITT. 'York,' and York S.W.
 The 'Radiated' Varieties in the Genus *Arctia*, etc. [*Arctia lubricipeda* var. *radiata* not uncommon about York; *A. menthastri* v. *walkeri* occurs in Yorkshire; and the corresponding variety of *A. mendica* occurs freely at Grimescar near Huddersfield]. Nat., Aug. 1889, p. 233.
- G. T. PORRITT. York S.W.
 Variation in *Arctia mendica* at Huddersfield [at Grimescar; specimens bred by G. T. Porritt exhibited to Ent. Soc. Lond., July 3rd, 1889]. Nat., Nov. 1889, p. 352.
- GEO. T. PORRITT. York S.W. and Mid W.
Scoparia basistrigalis as distinct from *S. ambigualis* [with references to the abundance of the former at Edlington Wood near Doncaster, 4th Aug. 1879; and to its being not uncommon one season in Bishop's Wood (Prest)]. E. M. M., March 1890, p. 88.
- GEO. T. PORRITT. York Mid W. and N.E.
Pterophorus zophodactylus [corrective of note by J. W. Ellis, and mentioning Bramham (J. Smith) and Sandburn (W. Prest) as localities]. Nat., April 1890, p. 116.
- GEO. T. PORRITT. York Mid W.
 Larvæ of *Tethea subtusa* and *Tæniocampa populeti* [and their habits: at Bishop's Wood the latter is the commoner of the two species]. Ent. Record, Aug. 15th, 1890, p. 137.
- GEO. T. PORRITT. York Mid W.
Phoxopteryx siculana in Yorkshire [at Askham Bogs, 31st May, 1890, new to the county list]. Nat., Sep. 1890, p. 267.
- GEO. T. PORRITT. York S.W.
 Is *Miana fasciuncula* a var. of *M. strigilis*? [question discussed and answered in the negative, the two being regarded as perfectly distinct; both occur in abundance near Huddersfield; interesting notes given on habitat, date, and diagnosis]. Ent. Rec., Dec. 15th, 1890, p. 243.

- G. PULLEN. Derbyshire.
Insects at Sugar at Derby [in September 1889; *Xanthia gilvago*, *X. ferruginea*, *X. cerago*, *Orthosia lota*, *Hadena proteus*, *Miselia oxyacanthæ*]. *Young Nat.*, Feb. 1890, p. 36.
- G. PULLEN. Derbyshire.
Nonagria Typhæ [occurs in great plenty near Derby, at the junction of the Midland and North Staffordshire Railways, in the stems of *Typha latifolia*]. *Young Nat.*, Oct. 1890, p. 199.
- NELSON M. RICHARDSON. Isle of Man.
Variation of *Phycis dilutella*, Hübn. [discussed on specimens from Isle of Man and elsewhere]. *E. M. M.*, May 1890, p. 139.
- JOHN E. ROBSON. Durham.
Collecting at Campion Flowers [which attract *Plusia festucae*, *Cucullia chamomillæ*, *Heliothis marginata*, *H. peltigera*, *Mamestra albicolon*, *M. abjecta*, *Agrotis velligera*, *A. tritici*, and *A. nigricans*, some of them near Hartlepool, if not all]. *Young Nat.*, June 1890, p. 117.
- JOHN E. ROBSON. Durham.
***Numeria pulveraria* at Hartlepool** [one 26th May and one 27th, at Hezleden Dene]. *Young Nat.*, June 1890, p. 117.
- JOHN E. ROBSON. Northumberland S.
Cænonympha davus [an account of a visit to its locality at Greenleighton Moors, Northumberland, not far from the Simonside hills, 16th July, 1890; *Tortrix viburnana*, *Anarta myrtilli*, *Mixodia schulziana*, and *Eupithecia nanata*, also taken]. *Young Nat.*, Aug. 1890, p. 154.
- JOHN E. ROBSON. Durham.
Hepialus humuli [the flight and habits described of the males, presumably at Hartlepool]. *Young Nat.*, Aug. 1890, p. 154.
- JOHN E. ROBSON. Durham.
Sphinx convolvuli [at Hartlepool, 23rd August, 1890, large male]. *Young Nat.*, Sep. 1890, p. 171.
- JOHN E. ROBSON. Durham.
Hybernia brumata [on oil lamps at South Hetton Station, 23rd Nov., 1890]. *Young Nat.*, Dec. 1890, p. 235.
- G. ROSS. Durham.
The Swifts at Bishop Auckland [where all five species of *Hepialus* occur; relative rarity stated]. *Young Nat.*, Aug. 1890, p. 155.
- J. H. ROWNTREE. York N.E.
[Lepidoptera observed by] The Yorkshire Naturalists' Union at Robin Hood's Bay [21st June, 1889; *Vanessa cardui* in numbers, *Pieris brassicae*, *Argynnis selene*, *Chortobius pamphilus*, *Thanaos tages*, *Strenia clathrata*, *Coremia propugnata*, *Lomaspilis marginata*, *Emmelesia albulata*, *Rumia*, *Cabera pusaria*, *Melanippe montanata*, and *Botys fuscalis* noted]. *Nat.*, Aug. 1889, p. 230.
- JAMES H. ROWNTREE. York N.W., Durham.
[Lepidoptera observed by] The Yorkshire Naturalists' Union in Upper Teesdale [in Aug. 1889; *Pieris napi*, *Vanessa urticae*, *Larentia didymata*, *L. caesiata*, *Thera variata*, *Cidaria russata*, *C. immanata*, *C. populata*, *C. pyraliata*, *Eubolia mensuraria*, *Chareae graminis*, *Scopula iutealis*, *Xylophasia polyodon*, *Notodonta ziczac*, *Acronycta menyanthidis*, and *Hadena pisi* noted, some in co. Durham]. *Nat.*, Sep. 1889, p. 283.
- J. H. ROWNTREE. York S.E.
[Lepidoptera observed by] The Yorkshire Naturalists' Union at Lowthorpe, near Driffield [26th May, 1890; *Pieris*, 3 spp., *Anthocharis*, *Vanessa urticae*, *V. cardui*, *Cænonympha pamphilus*, *Arctia lubricipeda*, and

Melanippe rivata observed, and of larvæ *Vanessa urticae*, *Arctia caja*, *Odonestis*, *Rumia*, *Odontopera*, *Hybernia progemma*, *Cheimatobia brumata*, *Melanippe montanata*, *Diloba ceruleocephala*, and *Miselia oxyacanthæ*.
Nat., July 1890, p. 207.

- J. H. SALTER, N. NEAVE. Derbyshire or Cheshire.
On the Derbyshire Border [of Cheshire, near Macclesfield; *Saturnia carpini* noted]. N. H. J., Sep. 15th, 1890, p. 102.
- W. E. SHARP. Lanc. S. and Cheshire.
Insect Migration and D[eilephila]. galii [argued, in criticism of Tutt's papers; and reference made to Lancashire and Cheshire evidence]. Young Nat., Sept. 1890, pp. 161-164.
- W. G. SHELDON. Notts, Derbyshire.
Agrotis agathina [and its occurrence in Sherwood Forest and at Breadsall near Derby]. Ent. Record, Aug. 15th, 1890, p. 139.
- G. W. SLATER. York N.E.
Colias edusa at Malton [one, 30th Aug. 1889]. Nat., Oct. 1889, p. 291.
- CHARLES SMETHURST. York Mid W.
Colias edusa near Arthington, etc. [22nd Sep. 1889, very pale female; record of very fine *Vanessa urticae* at Burley, Leeds, 2nd June, 1888; and breeding of *Abraxas grossulariata* in 1889 at Burley]. Nat., Feb. 1890, p. 44.
- W. HAWKER SMITH. Linc. N. or S.
Colias edusa near Lincoln [a male Aug. 29th, and another next day]. Nat., Nov. 1889, p. 352.
- RICHARD SOUTH. Lanc. W.
Variation of *Agrotis tritici* and *A. cursoria* from Lancashire [dealt with in a detailed manner and illustrated by woodcuts of the upper and under sides of the two species; inquiry based on 34 *A. tritici* and 45 *A. cursoria* sent by Baxter from St. Anne's-on-the-Sea]. Ent., May 1890, pp. 145-148.
- R. S[OUTH]. York S.E.
Plusia iota Larva [fifty from East Yorkshire] feeding on Hawthorn. Ent., June 1890, p. 204.
- [RICHARD] SOUTH. Durham.
[Exhibition of unusually Dark Form of *Larentia didymata* L. from Durham, exceedingly common]. South London Ent. Soc., Aug. 14th, 1890; Ent., Sept. 1890, p. 295; E.M.M., Sept. 1890, p. 249.
- RICHARD SOUTH. York S.W.
Additions to the British List of Deltoids, Pyralides, and Crambi, since 1859 [including *Scoparia basistrigalis*, Edlington Wood, Doncaster, Aug. 4th, 1879 (Porritt); and *S. ulmella* Dale, North of England (Hodgkinson)]. Ent., Sep. 1890, pp. 272 and 274. [Including *Crambus salinellus* Tutt, Preston, *Eromene ocella*, Cheshire, *Homæosoma nimbella* Zell. var. *saxicola* Vaugh., Isle of Man, Sept. 1866, larva on flower heads of chamomile; *Ephestia desuetella* Wlk., Liverpool, and *E. cahiritella* Zell., Preston, feeding on oil-cake]. Ent., Oct. 1890, pp. 299-305. [Including *Ephestia roxburghii* Gregs., Liverpool, and *Melissoblaptes cephalonica*, York; refer for details]. Ent., Nov. 1890, pp. 331 and 337.
- RICHARD SOUTH. Durham.
Collecting in Durham [about Bishop Auckland, at Wolsingham, Castle Eden, and High Force; *Cidaria immanata*, *Hypsipetes sordidata*, *Larentia didymata*, *Cerostoma sequella*, *Notodonta chaonia*, *Pedisca solandriana*, *Argynnis aglaia*, *Eubotia mensuraria*, *Plusia interrogationis*, *Larentia caesiata*, *L. salicata*, *Emmelesia ericetata*, *Lycæna astrarche* var. *salmacis*, *Metrocampa margaritaria*, *Amphisa gerningana*, *Pamplusa mercuriana*, *Noctua xanthographa*, *N. umbrosa*, *Triphæna pronuba*, *Polia chi*, with var. *olivacea*, and *Larentia olivata* noted]. Ent., Dec. 1890, p. 381.

- C. E. STOTT. Isle of Man.
Dianthæcia cæsia [and **Polia xanthomista** (*nigrocincta*) not likely to become extinct on the Manx coast]. Ent. Record, Dec. 15th, 1890, p. 260.
- J. H. STOTT. Lanc. S.
Celæna haworthii [its habits near Bolton]. Ent. Rec., Dec. 15th, 1890, p. 261.
- BEN. BLAYDES THOMPSON. York Mid W.
Colias edusa near Harrogate [on the 5th and 9th Sep., two males and a female]. Nat., Oct. 1889, p. 291.
- BEN. BLAYDES THOMPSON. York Mid W.
Colias Edusa at Harrogate [on Sep. 5th, 1889, two males, and a female four days later]. Young Nat., Feb. 1890. p. 36.
- B. BLAYDES THOMPSON. York Mid W.
Varieties of Phigalia pilosaria [among 16 examples captured Jan. 31st, 1890, presumably near Harrogate, were one olive, and one nearly black]. Ent. Record, April 15th, 1890, p. 11.
- B. BLAYDES THOMPSON. York Mid W.
Early Spring Moths [near Harrogate ; *Hybernia progemma*, *Phigalia*, *H. rupicapraria*, *Cheimatobia brumata*, and *Depressariæ*, all on 31st Jan.]. Ent. Record, April 15th, 1890, p. 11.
- C. F. THORNEWILL. Derbyshire.
[Captures of Lepidoptera near Burton-on-Trent in April and May 1877 ; dates given for *Tæniocampa stabilis*, *T. gothica*, *T. gracilis*, *T. populeti*, *Hybernia progemma*, *Gonepteryx rhamni*, *Selenia illunaria*, *Cidaria suffumata*, *Anticlea derivata*, and *A. badiata*]. 2nd Ann. Rep. Burton-on-Trent N. H. S., March 26th, 1878, p. 18.
- CHAS. F. THORNEWILL. Derbyshire.
Calendar of Nature for 1882 [near Burton-on-Trent ; giving dates for *Hybernia rupicapraria*, *Phigalia*, *Anticlea badiata*, *Tæniocampa* (five species), *Cirrhædia*, *Iodis lactearia*, *Cilix spinula*, *Cucullia verbasci*, *Noctua plecta*, *Dianthæcia cucubali*, *Amphidasys betularia*, *Halias prasinana*, *Fidonia piniaria*, *Notodonta camelina*, *Melanippe montanata*, *Rumia*, *Hepialus lupulinus*, *Emmelesia affinitata* (at Repton Shrubs), *Smerinthus populi*, *Acronycta megacephala*, *Xylophasia rurea*, *Ac. psi*, *Eupithecia absynthiata*, *Ac. tridens*, *Ebulea sambucalis*, *Larentia didymata*, *Hydrocampa stagnalis*, *Pionea forficalis*, *Nola cucullatella*, *Plusia chrysitis*, *Agrotis exclamationis*, *Caradrina cubicularis*, *Acidalia incanaria*, *Pyralis farinalis*, *Eupithecia absynthiata* (Willington), *Hydræcia micacea*, *Noctua rubi*, *Anchocelis litura*, and *Phlogophora meticulosa*]. 7th Ann. Rep. Burton-on-Trent N. H. and Arch. Soc. for year ending 31st March, 1883, p. 15.
- C. F. THORNEWILL. Derbyshire.
Calendar of Nature, 1883 [at Burton-on-Trent : dates given for *Tæniocampa gothica*, *T. instabilis*, *Pieris*, *T. populeti*, *T. stabilis*, *T. cruda* (these three at Bretby), *Cirrhædia xerampelina*, *Trachea piniperda*, *Eup lariciata*, *Anthocharis*, *Lycæna argiolus*, *Panagra petraria* (the three at Parson's Brake), *Noctua plecta*, *Melanippe fluctuata*, *Halia wavaria*, *Thera variata*, *Acronycta psi*, *Hepialus lupulinus*, *Rumia*, *Plusia gamma*, *Caradrina cubicularis*, *Melanippe montanata*, *Iodis lactearia*, *Eup. exigua*, *Asthena blomeraria*, *Abraxas ulmata*, *Hypsipetes ruberata*, *Emmelesia affinitata*, *Cidaria corylata*, *Tethea subtusa* (Bretby), *Smerinthus populi*, *S. ligustri*, *Eup. absynthiata*, *Sesia tipuliformis*, *Acidalia incanaria*, *Nola cucullatella*, *Mania typica*, *Acronycta megacephala*, *Triphena pronuba*, *Xylophasia polyodon*, *Hydrocampa stagnalis*, *Mania maura*, *Cynthia cardui*, *Anchocelis litura*, *Acidalia inornata*, and *Cheimatobia brumata*]. 8th Ann. Rep. Burton-on-Trent N. H. & Arch. Soc., year ending 31st Dec. 1883, pub. 1884, pp. 20-21.

C. F. T[HORNEWILL]

Derbyshire, Notts.

Calendar of Nature, 1884 [at Burton-on-Trent; dates given for *Hybernia rupicapraria* (Winshill), *Phigalia*, *Teniocampa instabilis*, *Hadena oleracea*, *Pieris rapæ*, *Eup. abbreviata* (Repton Shrubs), *Anthocharis cardamines*, *Pieris brassicæ*, *Hybernia defoliaria* (Repton Shrubs), *Cheimatobia boreata* (Repton Shrubs), *Eup. castigata*, *Acidalia remutata* (Repton Shrubs), *Iodis lactearia* (Repton Shrubs), *Apamea basilinea*, *Halia wavaria*, *Cidaria dotata*, *Eup. vulgata*, *Cabera pusaria* (Repton Shrubs), *Emmelesia affinitata* (Repton Shrubs), *Melanippe montanata* (Repton Shrubs), *Acronycta psi*, *Pionea forficulis*, *Smerinthus ligustri*, *Sesia tipuliformis*, *Emmelesia decolorata* (Repton Shrubs), *Melanthia albicillata* (Repton Shrubs), *Acidalia incanaria*, *Mamestra brassicæ*, *Miana fasciuncula*, *Hepialus humuli*, *Arctia lubricipeda*, *Caradrina cubicularis*, *Plusia chrysitis*, *Botys urticalis*, *Ebulea sambucalis*, *Miana strigilis*, *Diloba cæruleocephala*, *Nola cucullatella*, *Anticlea badiata*, *Pygæra bucephala*, *Cucullia umbratica*, *Plusia iota*, *P. pulchrina*, *Agrotis segetum*, *Dianthæcia cucubali*, *Caradrina morpheus*, *Axylia putris*, *Dianthæcia carpophaga*, *Agrotis exclamationis*, *Xylophasia polyodon*, *Triphæna pronuba*, *Xanthia silago*, *Orgyia antiqua*, *Nonagria typhæ* (Willington), *Noctua umbrosa*, *Paraponyx stratiotalis*, *Eubolia mensuraria* (Cresswell, Notts), *Dianthæcia capsicola* (Cresswell, Notts), *Eup. nanata* (Eyam), and *Anarta myrtilli* (Eyam)]. 9th Ann. Rep. Burton-on-Trent N. H. & Arch. Soc. for 1884, publ. 1885, pp. 23-25.

C. F. THORNEWILL.

Derbyshire.

Calendar of Nature, 1885 [near Burton-on-Trent; dates given for *Phigalia*, *Selenia illunaria*, *Teniocampa gothica*, *Amphidasis prodromaria*, *Cidaria suffumata*, *Selenia illunaria*, *Anticlea derivata*, *A. badiata*, *Hybernia progemma*, *Scotosia certata*, *Halia wavaria*, *Cidaria dotata*, *Acronycta psi*, *Euchelia jacobææ*, *Eup. isogrammata*, *Eup. vulgata*, *Hadena oleracea*, *Euplexia lucipara*, *Miselia oxyacanthæ*, *Caradrina cubicularis*, *Acidalia aversata*, *Hepialus lupulinus*, *Arctia lubricipeda*, *Acronycta tridens* (Repton Shrubs), *Eupisteria heparata* (Repton Shrubs), *Acidalia remutata* (Repton Shrubs), *A. candidata* (Repton Shrubs), *Cabera exanthemaria* (Repton Shrubs), *Hybernia defoliaria* (Repton Shrubs), *Himera pennaria* (Repton Shrubs), *Metrocampa* (Repton Shrubs), *Pericallia syringaria*, *Ebulea sambucalis*, *Botys verticalis*, *Pionea forficulis*, *Agrotis segetum*, *Smerinthus populi*, *Eup. fraxinata*, *Eup. debiliata*, *Hepialus humuli*, *Dianthæcia cucubali*, *Eup. nanata*, *Coremia propugnata*, *Acidalia incanaria*, *Porthesia similis*, *Cosmia trapezina*, *Eucosmia certata*, *Notodonta dictæa*, *Xanthia fulvago*, *X. silago*, *Dianthæcia capsicola* (Willington), *Nonagria typhæ* (Willington), *Vanessa urticæ*, *Smerinthus populi* (Repton Shrubs), *Teniocampa stabilis* (Repton Shrubs), *Eup. abbreviata* (Repton Shrubs), *Acherontia atropos*, *Dianthæcia cucubali*, *Hepialus humuli*, *Hadena pisi*, *Luperina testacea*, *Melanippe fluctuata*, *Mania maura*, *M. typica*, *Acronycta megacephala*, *A. psi*, *Sphinx convolvuli*, *Hydræcia micæa*, *Dianthæcia carpophaga*, *Vanessa atalanta*, *Smerinthus populi*, *Hadena protea* (Bretby Park), *Eup. castigata* (Repton Shrubs), *Macroglossa stellatarum*, *Phlogophora meticulosa*, *Cheimatobia brumata*, *Hyb. aurantiaria*, and *Himera pennaria*]. 10th Ann. Rep. Burton-on-Trent N. A. & Arch. Soc. for 1885, pub. 1886, pp. 21-24.

C. F. THORNEWILL.

Derbyshire.

Calendar of Nature, 1886 [for Burton-on-Trent; dates given for *Hybernia progemma*, *Alucita polydactyla*, *Hyb. rupicapraria* (Bretby Lane), *Amphidasis prodromaria*, *Hyb. leucophæaria*, *Cucullia verbasci*, *Teniocampa stabilis* (Bretby), *T. instabilis* (Bretby), *T. rubricosa* (Bretby), *T. populeti* (Bretby), *T. gothica* (Bretby), *T. cruda* (Bretby), *Vanessa urticæ*, *Pieris rapæ*, *Dicranura vinula*, *Cirrhædia xerampelina*, *Scotosia certata*, *Mania typica*, *Eup. isogrammata*, *Smerinthus populi*, *Eup. venosata*, *Xanthia ferruginea*, *Notodonta dictæa*, *Noctua augur* (Willington), *Xanthia gilvago* (Willington), *Eup. castigata*, *Scotosia certata*, *Apamea basilinea*, *Melanippe fluctuata*, *Eup. vulgata*, *Caradrina cubicularis*, *Hadena oleracea*, *Gonoptera*

libatrix, *Rumia*, *Mamestra brassicæ*, *Hepialus lupulinus*, *Smerinthus populi*, *Agrotis suffusa*, *Acronycta psi*, *Saturnia carpini*, *Hepialus humuli*, *Hadena pisi*, *Scotosia certata*, *Arctia fuliginosa*, *Dianthæcia carpophaga*, *Arctia menthastri*, *A. lubricipeda*, *Eup. lariciata* (Decoy Wood, Bretby), *Asthena blomeri* (Hoofie's Wood, Bretby), *Abraxas ulmata* (Hoofie's Wood, Bretby), *Thecla w-album* (Hoofie's Wood, Bretby), *Acronycta megacephala*, *Emmelesia affinitata* (Bretby), *E. decolorata* (Bretby), *Hepialus vellea* (Bretby), *Hadena oleracea*, *Acronycta megacephala*, *Xylophasia rurea*, *Apamea unanimis*, *Agrotis exclamationis*, *Lomaspilis marginata* (Bretby), *Eup. absynthiata*, *Agrotis segetum*, *Ebulea sambucalis*, *Hep. hectus* (Bretby), *Melanthia albicillata* (Bretby), *Eubolia palumbaria* (Bretby), *Scotosia certata* (Appleby), *Coremia propugnata*, *Mania typica*, *Triphæna pronuba*, *Mamestra anceps*, *Pionea forficalis*, *Xylophasia polyodon*, *Noctua augur*, *Cidaria populata*, *Thecla w-album*, *Xanthia cerago* (Willington), *Cirrhædia xerampelina*, *Nonagria typhæ* (Willington), *Dianthæcia capsincola* (Willington), *Acronycta megacephala*, *Amphipyra tragopogonis*, *Acidalia incanaria*, *Acr. psi*, *Xanthia gilvago*, *Paraponyx stratiotatis* (Willington), *Epione apiciaria*, *Phibalapteryx lignata*, *Acidalia incanaria*, *Apamea unanimis*, *Smerinthus populi*, *Hadena protea* (Bretby), *Acronycta tridens* (Bretby), *Eubolia cervinaria*, *Vanessa io*, *Scopelosoma satellitia*, *Xanthia ferruginea*, *Euplexia lucipara*, *Eup. castigata* (Repton Shrubs), *Eup. albipunctata* (Repton Shrubs), *Eup. trisignata* (Repton Shrubs), *Oporabia dilutata* (Repton Shrubs), *Cheimatobia brumata* (Repton Shrubs), and *Hybernia defoliaria* (Repton Shrubs)]. 11th Ann. Rep. Burton-on-Trent N. H. and Arch. Soc., for 1886, pub. 1887, pp. 20-26.

C. F. THORNEWILL.

Derbyshire.

Calendar of Nature, 1887 [at Burton-on-Trent; dates given for *Phigalia*, *Teniocampa gothica*, *Cossus*, *Anisopteryx æscularia*, *Ten. instabilis*, *Scotosia certata*, *Pieris rapæ*, *Cirrhædia*, *Noctua augur* (Newton Solney), *Eup. vulgata*, *Dicranura vinula*, *Odonestis*, *Anthocharis*, *Smerinthus populi*, *Fidonia piniaria* (do.), *Panagra petrararia* (do.), *Tephrosia biundularia* (do.), *Ypsipetes impluviata* (do.), *Coremia propugnata* (do.), *Eupithecia nanata* (do.), *Eup. indigata* (do.), *Melanthia ocellata* (do.), *Eupisteria heparata* (do.), *Thera firmata* (do.), *T. variata* (do.), *Cheimatobia boreata* (do.), *Arctia fuliginosa*, *Notodonta camelina* (Bretby), *Platypteryx lacertula*, *Acronycta alni*, *Dianthæcia capsincola*, *Agrotis segetum*, *Caradrina cubicularis*, *Hadena oleracea*, *Pionea forficalis*, *Eup. castigata*, *Eup. pulchellata*, *Dianthæcia carpophaga*, *Platypteryx falcula*, *Abrostola triplasia*, *Apamea unanimis*, *Axyliia putris*, *Euplexia lucipara*, *Acidalia incanaria*, *Plusia chrysitis*, *Amphidasis betularia*, *Anarta myrtilli*, *Plusia festuæ* (Burton), *Cidaria dotata*, *Ellopiia fasciaria*, *Plusia iota*, *Pl. pulchrina*, *Hydrocampa stagnalis*, *Dianthæcia cucubali*, *Odonestis*, *Halia wavaria*, *Cucullia umbratica*, *Xylophasia polyodon*, *Eup. subnotata*, *Vanessa urticae*, *Noctua festiva*, *Dianthæcia capsincola*, *Crocallis*, *Pyralis farinalis*, *Smerinthus ocellatus*, *Scotosia dubitata*, *Charæas graminis* (Ashby Road), *Melanippe fluctuata* (Ashby Road), *Triphæna orbona* (Ashby Road), *T. ianthina* (Ashby Road), *Coremia unidentaria* (Ashby Road), *Ypsipetes elutata* (Ashby Road), *Eudorea cembræ* (Ashby Road), *Hydræcia micacea*, *Ennomos tiliaria*, *Eup. absynthiata* (Willington), *Agriopsis aprilina*, *Pelurga comitata* (Stapenhill), *Eup. subnotata* (Stapenhill), *Hadena oleracea* (Stapenhill), *Mamestra persicariæ*, *Plusia chrysitis*, *Orgyia antiqua* (Repton Shrubs), *Hadena protea* (Repton Shrubs), *Eup. castigata* (Repton Shrubs), *Eup. trisignata* (Repton Shrubs), *Eup. albipunctata* (Repton Shrubs), *Cheimatobia boreata*, *C. brumata*, and *Pæcilocampa populi*]. Ann. Rep. Burton-on-Trent N. H. & Arch. Soc. for 1887-88, pub. 1888, pp. 29-30.

CHAS. F. THORNEWILL.

Derbyshire.

Report of the Entomological Section [of the Burton-on-Trent N.H.S. for year 1889; phænological notes on *Thecla w-album* in Repton Shrubs, *Thera variata* and *Macaria liturata* in Hoofie's Wood, *Acherontia atropos* near Burton, and absence of *Sphinx convolvuli*]. Ann. Rep. Burton-on-Trent N.H.S. for 1889, p. 11.

C. F. THORNEWILL.

Derbyshire.

Calendar of Nature, 1888 [near Burton-on-Trent; dates given for *Hybernia progemmaria*, *Amphidasis prodromaria*, *Tæniocampa stabilis*, *T. instabilis*, *T. gothica*, *Trachea piniperda*, *Pæcilocampa populi*, *Tephrosia punctulata*, *Eup. albipunctata*, *E. indigata*, *Arctia mendica*, *Pieris brassicæ*, *Anthocharis cardamines*, *Tephrosia binundularia*, *Lobophora hexapterata* at Repton Shrubs, *Odontopera bidentata*, *Lomaspilis marginata*, *Eup. centaureata*, *Acronycta alni*, *Orgyia pudibunda*, *Cidaria corylata*, *Fidonia piniaria*, *Hadena thalassina*, *Platypteryx lacertula*, *Nola cucullatella*, *Nemeophila plantaginis*, *Arctia lubricipeda*, *Hepialus lupulinus*, *Rumia*, *Smerinthus populi*, *Dianthæcia cucubali*, *Botys urticalis*, *Cabera pusaria*, *Amphidasis betularia*, *Eup. pulchellata*, *Emmelesia albulata*, *Eup. valerianata*, *Mamestra persicariæ*, *Dianthæcia capsicola*, *Axylia putris*, *Agrotis segetum*, *Hadena oleracea*, *Plusia gamma*, *P. pulchrina*, *Caradrina morpheus*, *Agrotis exclamationis*, *Eup. absynthiata*, *Mamestra anceps*, *Cucullia umbratica*, *Abrostola triplasia*, *Triphæna pronuba*, *Hadena dentina*, *Ebulea sambucalis*, *Eup. subnotata*, *Eup. venosata*, *Apamea basilinea*, *Xylophasia polyodon*, *Plusia chrysitis*, *Eup. decolorata*, *Plusia festuæ*, *Camptogramma bilineata*, *Cherocampa porcellus*, *Acronycta leporina*, *Miana strigilis*, *Leucania comma*, *Acronycta megacephala*, *Acidalia incanaria*, *Noctua augur*, *Hydrocampa stagnalis*, *Notodonta camelina*, *Ennomos angularia*, *Pelurga comitata*, *Leucania pallens*, *Notodonta dictæa*, *Apamea oculatea*, *Axylia putris*, *Orthosia upsilon*, *Nola cucullatella*, *Cosmia trapezina*, *Tethea subtusa*, *Liparis chrysorrhæa*, *Thera firmata*, *Arctia lubricipeda*, *Xanthia gilvago*, *Hydræcia petasitis*, *Eunomos tiliaria*, *Diloba ceruleocephala*, *Hydræcia micacea*, all near Burton; *Eup. absynthiata* and *Hadena adusta* at Cloud Lime Quarries; *Fidonia piniaria*, *Abraxas ulmata*, *Asthena blomeri*, *Herminia grisealis*, *Thecla w-album*, *Petasia cassinea*, *Xanthia ferruginea*, *Metrocampa margaritata*, at Hoohe's Wood; *Scopelosoma satellitia*, *Xanthia ferruginea*, *X. gilvago* at Knightley Park; *Trichiura crategi*, *Diloba ceruleocephala*, *Orthosia upsilon* at Willington; *Melanthia albicillata*, *Cabera exanthemaria*, and *Thecla w-album* at Repton Shrubs; *Satyrus hyperanthus*, *Cidaria pyraliata*, *Noctua brunnea*, *Hadena dentina*, *Hypena proboscidalis*, and *Anthocharis cardamines* at Stretton-en-le-Field].
Ann. Rep. Burton-on-Trent N.H.S. for 1889, pp. 22-24.

C. F. THORNEWILL.

Derbyshire.

[Two apparently Distinct Forms of *Phigalia pilosaria* round Burton-on-Trent, one in the open country, one in the woods]. Birm. Ent. Soc., March 3rd, 1890; E.M.M., April 1890, p. 118; Ent., April 1890, p. 144.

CHAS. F. THORNEWILL.

Derbyshire.

Report of the Entomological Section [of the Burton-on-Trent N.H.S.; larvæ of *Dianthæcia cucubali* numerous in the writer's garden, Burton-on-Trent].
Ann. Rep. Burton-on-Trent N.H.S. for year ended Sep. 30th, 1890, p. 11.

C. F. THORNEWILL.

Derbyshire.

Calendar of Nature, 1889 [for Burton-on-Trent district; dates given for *Tæniocampa gothica*, *T. stabilis*, *T. instabilis*, *T. rubricosa*, *T. populeti*, *T. cruda*, *Macaria liturata*, *Coremia propugnata*, *Asthena blomeri*, *Hepialus vellea*, *Emmelesia affinitata* and *Thecla w-album* at Bretby, for *Lobophora hexapterata* at Repton Shrubs, and for *Pieris rapæ*, *Hemerophila abruptaria*, *Scotosia certata*, *Smerinthus populi*, *Emmelesia decolorata*, *Dianthæcia cucubali*, *Abrostola triplasia* and *Cheimatobia brumata*, in addition to numerous others 'emerged from pupa']. Ann. Rep. Burton-on-Trent N.H.S., for year ending 30th Sept. 1890, p. 21.

T. TUNSTALL

Cheshire.

Spring Notes [from Cheshire sandhills; *Eubolia lineolata* (*virgata*) on 12th April, early]. Ent. Record, June 15th, 1890, p. 63.

THOS. TUNSTALL.

Lanc. S. or Cheshire?

Notes of the Season . . . Warrington [*Heliothis armiger* the only good thing taken]. Ent. Rec., Sept. 15th, 1890, p. 158.

- J. W. TUTT. Lanc. S. or Cheshire.
Contributions towards a List of the Varieties of Noctuæ occurring in the British Islands [*Apamea leucostigma* Hb. var. *albipuncta* mihi, occurs a few miles from Warrington together with type and var. *intermedia* mihi]. Ent., Jan. 1890, p. 13.
- York Mid W., N.E. and S.W., Durham? Northumb. S., Derbyshire,
 J. W. TUTT. Cheshire, Lanc. S., Lake District, and Isle of Man.
The Pterophorina of Britain [monographed; with particulars of Porritt and Dennis's Saltburn capture of *P. ochrodactyla* Hb. = *P. dichrodactylus* Muhl., and its presence at Huddersfield and Darlington; and *P. bertrami* Rossl. at Askham Bog in abundance]. Young Nat., Jan. and Feb. 1890, pp. 18-26. [*Pterophorus gonodactylus* Schiff., at Burton-on-Trent; one of the commonest plumes in Yorkshire (Porritt); Birkenhead, Darlington, Lake District, Manchester, Newcastle-on-Tyne, Scarborough and York (Stainton's Manual)]. Young Nat., July 1890, pp. 131-132. [Recommendation that the Isle of Man be examined for *Pterophorus zetterstedtii*, though it has not yet occurred there]. Young Nat., Oct. 1890, p. 182.
- J. W. TUTT. Westmorland.
Notes on Lita (Gelechia) junctella [argumentation based in part on Witherslack examples]. Ent. Record, April 15th, 1890, pp. 7-9.
- J. W. TUTT. York S.W.
Acronycta ligustri var. nigra [taken by A. E. Hall, June 11th, 1888, in Wadworth Wood, near Doncaster]. Ent. Record, May 15th, 1890, p. 34.
- J. W. TUTT. ? Notts.
Theristis mucronella (caudella, Sta.) var. striata [sent by W. Daws of Mansfield; described]. Ent. Record, May 15th, 1890, p. 35.
- J. W. [TUTT]. York S.W.
[Hydræcia petasitis at Sheffield taken in the factory yards on the plants growing among the refuse, but very rarely among the larger plants of *Petasites vulgaris* growing on the river banks]. South Lond. Ent. Soc., April 24th, 1890; E. M. M., June 1890, p. 165; Ent., June 1890, p. 207; Young Nat., June 1890, p. 109.
- J. W. TUTT. Isle of Man, Durham, Lanc. S., Cheshire, Notts.,
York S.W. and Mid W., Derbyshire.
Melanism and Melanochroism in British Lepidoptera [discussed in detail, and the climatic peculiarities of Lancashire and West Yorkshire considered; *Amphidasia betularia*, *Tephrosia biundularia*, *Boarmia rhomboidaria*, *B. repandata*, *Diurnea fagella*, and *Hybernia progemmaria* instanced]. Ent. Record, June 15th, 1890, pp. 49-56. [Full account by Mr. Sheldon of the increase of melanism in *Tephrosia biundularia* near Derby, of *Boarmia repandata* near Huddersfield, *T. biundularia* and its total change of colour in Delamere Forest, the same in *Amphidasia betularia* in South Lancashire, also at Derby and at Mansfield; *B. rhomboidaria*, *Diurnea fagella*, *Hybernia progemmaria*, *Cidaria russata* and *Arctia mendica* near Huddersfield and Sheffield]. Ent. Record, July 15th, 1890, pp. 84-90. [References made to Durham and Yorkshire variation in *Polia chi*]. Ent. Record, Oct. 15th, 1890, p. 171.
- [J. W.] TUTT. Lanc. S. or Cheshire.
[Exhibition of Melanic Form of *Cidaria immanata* from Warrington]. City of London Ent. Soc., 15th May, 1890; Ent. Record, June 15th, 1890, p. 71; Young Nat., July 1890, p. 138.
- J. W. T[UTT]. and T. D. A. C[OCKERELL]. York S.W.
Additions to the British List and Changes in Nomenclature [*Acronycta ligustri* var. nov. *nigra* Tutt, near Doncaster, *Apamea leucostigma* var. nov. *intermedia* Tutt, near Warrington]. Ent. Record, Sept. 15th, 1890, p. 151.

- J. W. TUTT. Notts.
Zygæna loniceræ imago with head of larva [bred from Mansfield pupæ by Mr. Daws; two imagines emerged with the heads of the larva still unchanged]. Ent. Record, Oct. 15th, 1890, p. 174.
- J. W. TUTT [signed 'Ed.']. Durham.
[Footnote to note on] Local Form of Abraxas ulmata [with respect to large and small forms being in abundance together in Durham]. Ent. Record, Oct. 15th, 1890, p. 177.
- J. W. TUTT. Lanc. S. or W.
Crambus salinellus near Preston [correcting an error of nomenclature, the species having been erroneously reported as *C. contaminellus*]. Nat., Nov. 1890, p. 334.
- J. W. TUTT. Lanc. W.
Time of Appearance of Peronea hastiana [as observed in examples from St. Anne's-on-Sea]. Ent. Rec., Dec. 15th, 1890, p. 263.
- F. A. WALKER. York.
Note on Cidaria immanata from Iceland [also that var. *thingvallata* Staud. exactly corresponds to a specimen in R. South's collection, taken at York]. Ent., Feb. 1890, p. 66.
- SAMUEL WALKER. York Mid W.
Colias edusa in 1889; Additional Record—Yorkshire [fine male on Selby and York Road, near Bishop Wood, Sept. 5th, 1889]. Ent., Feb. 1890, p. 69.
- S. WALKER. York N.E.
Epione parallelaria [=vespertaria] var. [criticising adversely the editor's note to Mr. Hewett's record; and account given of other specimens]. Ent., March 1890, p. 100.
- S. WALKER. York ?
Spring Notes [presumably near York; Lobophora lobulata taken]. Ent. Record, June 15th, 1890, p. 63.
- S. WALKER. 'York.'
Notes of the Season (Lepidoptera) . . . York [*Teniocampa populeti*, *Tethea subtusa*, and *Hybernia defoliaria* common]. Ent. Record, Aug. 15th, 1890, p. 128.
- S. WALKER. York Mid W. and ? N.E.
Notes of the Season . . . York [*Leucania pudorina*, *Acronycta (Cuspidia) leporina*, and, at Askham Bog *Hydrelia unca*, noted]. Ent. Rec., Sept. 15th, 1890, p. 156.
- S. WALKER. 'York.'
Distribution of Cidaria suffumata var. piceata [and of type; both occur about York]. Ent. Rec., Dec. 15th, 1890, p. 240.
- S. WALKER. York N.E.
Chrysophanus phlæas var. schmidtii [two captured at Strensall Common]. Ent. Record, Dec. 15th, 1890, p. 242.
- [J. R. WELLMAN. Yorkshire.
[Exhibition of Nemeophila plantaginis var. hospita, taken in Yorkshire, 1860]. South Lond. Ent. Soc., Nov. 14th, 1889; Young Nat., Jan. 1890, p. 11; Ent., Jan. 1890, p. 23; E. M. M., Feb. 1890, p. 54.
- [J. R.] WELLMAN. Isle of Man.
[Exhibition of Manx Eupithecia venosata which had been two years in pupa]. South Lond. Ent. Soc., June 12th, 1890; Young Nat., July 1890, p. 139; Ent., July 1890, p. 237; E. M. M., Aug. 1890, p. 223.

- [J. R.] WELLMAN. Isle of Man.
 [Exhibition of Manx *Eupithecia* *rectangulata* var. *nigrosericeata* and *Eup. venosata*]. South Lond. Ent. Soc., June 12th, 1890; Ent. Record, July 15th, 1890, p. 119.
- J. WELLMAN. Isle of Man.
 Retarded Emergences [of Manx *Eupithecia venosata*, two years in pupal stage]. Ent. Record, July 15th, 1890, p. 109.
- J. R.] WELLMAN. Isle of Man, Lanc. S.
 Exhibition of *Dianthæcia cucubali*, Liverpool, and *D. carpophaga* var. *capsophila* Dup., [Isle of Man]. South Lond. Ent. Soc., 10th July, 1890; E.M.M., Aug. 1890, p. 224; Ent., Aug. 1890, p. 266; Young Nat., Aug. 1890, p. 152.
- W. WEST. Derbyshire.
 [Exhibition of *Celena haworthii* from Derbyshire]. South Lond. Ent. Soc., Oct. 9th, 1890; Ent. Rec., Oct. 15th, 1890, p. 192.
- EDWARD WOODTHORPE. Linc. N.
Colias edusa, *Vanessa cardui*, and other Butterflies near Alford, Lincs. [particulars given of these and *Melanargia galathea*, and 16 other species enumerated as taken during the season of 1889]. Nat., Feb. 1890, p. 44.
- JOHN N. YOUNG. York S.W.
 Lepidoptera in 1889 . . . Rotherham [detailed notes on *Triphæna fimbria*, four *Teniocampæ*, *Scopelosoma satellitia*, *Cerastis vaccinii*, *Thecla w-album*, *Cymatophora flavicornis*, *Brephos parthenias*, *Geometra papilionaria*, *Pacilocampa*, *Nyssia hispidaria*, *Eupevia fulvago*, *Dicranura bifida*, *Notodonta dictæa*, *N. dictæoides*, *N. ziczac* and *Lobophora halterata*]. Ent., Feb. 1890, p. 68.
- J. N. YOUNG. York S.W.
 The Sallow Season of 1890 . . . Rotherham [*Scopelosoma satellitia*, *Cerastis vaccinii*, *Teniocampa cruda*, *T. gothica*, *T. instabilis*, *T. stabilis*, *T. rubricosa*, *T. munda*, *T. populeti*, *Pachnobia leucographa*; the sallows are ten miles or more away from Rotherham]. Ent., June 1890, p. 202.
- J. N. YOUNG. York S.W.
 Note on the Life-History of *Bombyx quercus* v. *callunæ* [as studied near Rotherham]. Ent., Aug. 1890, p. 259.
- JOHN M. YOUNG. York S.W.
 Larvæ of *Triphæna fimbria* [near Rotherham; infested by *Campoplex mixtus* Grav.]. Ent., Aug. 1890, p. 263.

NOTE—LEPIDOPTERA.

Lepidoptera near Lincoln.—During a walk through one of the woods near Saxilby, six miles north-west of Lincoln, on May 21st, the following butterflies were seen:—*Pieris brassicæ*, *P. rapæ*, *P. napi*, *Anthocharis cardamines*, all common; *Argynnis selene*, *A. euphrosyne*, abundant; *Vanessa atalanta*, one specimen; *Chortobius pamphilus*, abundant; *Polommatus phlæas*, one; *Lycæna alexis*, common; *Thanaos tages*, *Hesperia sylvanus*, common; *H. paniscus*, abundant; a total of thirteen species within a very small area. Many species of moths were also noticed, among which may be mentioned:—*Macroglossa fuciformis*, fairly common; *Heliodes arbuti*, several; *Euclidia mi*, *E. glyphica*; *Melanippe hastata*, several, etc., etc. On the following day, near Langworth, most of the above butterflies were again seen, and, in addition, *Satymus megera*. The same moths were also noticed, with the exception of *E. glyphica*, but in addition the following species were taken:—*Lithosia rubricollis*, *Halias prasinana*, *Thyatira batis*, *Cymatophora or* (the two latter at sugar), with many other species. A few days later my brother took, near Lincoln, a number of larvæ and pupæ of *Thecla w-album*.—J. W. CARR, University College, Nottingham, June 1st, 1893.

SOME STRAY NOTES FROM THE YORKSHIRE COAST IN THE SPRING OF 1893.

JOHN CORDEAUX, M.B.O.U.,

Eaton Hall, Retford.

IN 'The Naturalist' for April 1893, p. 105, in my notes on the migratory flocks of purple-headed Starlings, seen near the coast in Holderness in February, I omitted to state that the eight shot on February 25th from one flock were all males, and that six shot from another flock on March 19th were females. This is suggestive of the separation of the sexes at the period of migration.

In the first week in March I was shown two Ruffs (*Machetes pugnax*) taken in a plover-net near Tetney, which had already partly got the nuptial plumage. When at Flamborough in May, I saw at the house of a fisherman a Crane (*Grus communis*) shot by Mr. John Huddleston, farmer, of that place, from a field near his house in the last week in February 1892. This had been skinned and set up by the late Mr. Jones, of Bridlington. It is, I think, a young bird of the previous year, and has feathers, and no red patch on the crown, and the hind plumes are short.

Two Avocets (*Recurvirostra avocetta*) were seen some days to haunt a pond near the lighthouse at Flamborough during the last week of April. It appears from a paragraph, by Mr. Boyes, which appeared in 'The Field' of May 27th, that one of these, a female, was shot—a most regrettable circumstance, as it is not improbable the birds would have remained in the district.

One Black Redstart and two Pied Flycatchers (*Muscicapa atricapilla*) had been seen early in May. I saw two adult males of *R. titys* which had been captured in gardens at Flamborough in the spring of 1891. It is not generally known that this species is almost a regular immigrant to the Headland in the spring and autumn, appearing earlier than the common species, and about a month later in the autumn. In the spring of 1891, as Mr. Bailey told me, many were seen; first, scores on April 6th, and again a great rush on May 10th and 11th. These seem to have been spread over a considerable district in hedge-row and garden, along with Pied Flycatchers, Common Redstarts, and other small species. All the Black Redstarts observed were adult males; I do not think, however, that local observers would be able to distinguish between the females of the two species.

On May 11th, Mr. Bailey and I, when at the Bempton Cliffs, saw an adult male Lapland Bunting (*Plectrophanes lapponicus*) in

July 1893.

summer plumage, sitting in the short herbage at the very edge of the cliff; we both observed it through binoculars for some little time, till it flew down the face of the cliff amongst the Guillemot and other rock birds, and did not appear again. The intense velvety black of the dark parts particularly struck the eye as contrasting with the yellow bill, broad white streak above the eye, and chestnut collar. The ordinary rock birds on the cliffs are in great force, and now occupy places on the lower cliffs south of the north landing, which were not tenanted some years since. When I first knew Flamborough, only a few pair of Stock-Doves (*Columba ænas*) bred there—now there are hundreds. In the spring of 1892, a pair of Green Cormorant (*Phalacrocorax graculus*) were often seen about the cliffs, and showed every disposition to remain and nest; I fear, however, from what I heard, those were shot by the fishermen, who are not proof against the bribes offered by greedy collectors and mercenary dealers, who more than any others are mainly responsible for the continued destruction and extermination of our rarer bird visitors.

The egg-climbers do not commence work before May 13th. The rock birds, I could see on the 11th, had some eggs on the ledges. Several broken egg-shells were also found by us in the fields along the summit of the higher cliffs, carried there by daws. Mr. Bailey and I saw a Daw flying up from below carrying a Guillemot's egg on his beak. The amount of eggs destroyed in one season by these most persistent and cunning pilferers must be very great indeed, and they abound in every part of the cliffs. Fishermen say that the Daws do not always plunder with impunity, for the outraged Guillemot has been seen to seize the thief by the neck and carry him down to the water, thus miserably to perish. As far as I can judge, this species seems everywhere to be decidedly on the increase, accommodating themselves to any holes they can appropriate, whether it be the cliffs of Flamborough, the ancient oaks of Sherwood and Birklands, a church tower or unused chimney; and are equally at home amongst the burrows of a rabbit-warren. Rock Pipits seem very numerous along the cliff, and in one place I saw half-a-dozen Tree Sparrows (*Passer montanus*) on the guard-fence, and from their actions concluded that they were probably nesting somewhere just below the summit. The grassy slopes along the crest of the Flamborough cliffs, having a northern aspect, are now thickly sprinkled with pale primroses, which I always think are the smallest blooms and latest in flowering I ever see in England.

The Golden-crested Wren, so abundant on migration in the autumn, is known at Flamborough as the 'woodcock pilot'; but at Filey the fishermen call it the 'herring-spink.' This name is, I also

find, common amongst the fishermen in East Suffolk, from the fact that these little wanderers are accustomed to alight on the boats when at sea in the herring season, and they are then considered to indicate good luck and a heavy catch.

When I was at Flamborough a large but somewhat lean cod was brought in by one of the boats, and on opening and cleaning this fifty-nine hooks were found in the stomach. These were white-tinned hooks, medium size, about two inches long, and still had pieces of whelk-bait adhering. These were not Flamborough hooks, for the whipping extended further down the shanks than in those in use on the headland. I can only conjecture that some fisherman at sea had been renewing his hooks on the long-line, and had thrown the discarded blunt ones overboard in a lump. I have heard of a Woodcock, and in another case of a Dutch cheese, taken from the inside of a cod, but fifty-nine hooks is a thing unique of its kind. Strange and unlooked for substances do occasionally turn up from the stomachs of animals. For instance, I have seen a handful of nails—double-tens—taken from an ox, slaughtered because it was ‘doing badly.’ And I have now on the table a fence iron spike, $7\frac{1}{8}$ inches long, and weighing $2\frac{3}{4}$ oz., which was taken from the inside of a Christmas goose in 1891, reared, fed, and dressed on the premises.

Near Kilnsea, on the 13th, I saw two Cormorants (*Phalacrocorax carbo*) flying north. A pair are reported as having nested and got off their young from a wreck on the coast north of this place, but I cannot ascertain if this is the fact. Two Dotterel (*Eudromias morinellus*) were seen in a field near the beacon in the second week in May, but up to the end of the month I have not heard of any having been observed in their old quarters in Lincolnshire.

In the middle of May I watched some very beautiful Turnstones (*Streptilas interpres*), in adult plumage, foraging amongst the tide-wrack; also some Whimbrel. Several Red Godwit (*Limosa lapponica*) were also seen early in May, and on the 14th I saw a single Grey Crow (*Corvus cornix*).

I notice that the Snipe which nest in the meadows near the River Idle, in Notts, not unfrequently perch on cattle rails, and I recently saw one on the summit of an old thorn which did not fly before I had got close to it. The Redshank here also frequently alights on gates and rails.

Have any of the readers of ‘The Naturalist’ remarked the very small size this year of the orange-tip butterfly (*Anthocharis cardamines*)? I have seen several so small that I could scarcely imagine they could belong to the same species.

THE BIRDS OF DERBYSHIRE.

The | **Birds of Derbyshire, | with Map and Six Illustrations, | by |**
 F. B. WHITLOCK. | Annotated, with Numerous Additions, | by | A. S.
 HUTCHINSON, | Taxidermist to the Derby, Sheffield, &c., Museums. |
 London : | Bemrose & Sons Limited . . . | 1893. | |
 8vo., 239 pp., with Map and Six Illustrations.

The faunal area included within the political boundaries of Derbyshire is a comparatively limited one, not exceeding 1,030 square miles. This may be divided into three parts having very distinct features: the southern plains, central hill district, and the mountainous north, where bleak treeless uplands, on the borders of Yorkshire and Cheshire, rise to an elevation of over 2,000 feet, and form the well-known Peak district, intersected, however, with well sheltered and lovely dales. From this it may be understood that the scenery is widely contrasting, and that this diversity of surface naturally favours a great variety of animal life. The county also owes much of the richness of its avi-fauna to the river valleys of the Derwent and the noble Trent, which in spring and autumn are highways of migration leading far inland. This is especially the case with the Trent valley, where much the greater number of rare and occasional inland stragglers from the coast have from time to time been seen or obtained.

The total number of species of birds occurring or reputed to have occurred is 241; 84 being residents, 72 migrants, and the large number of 85 are casual visitors. Of those classed by the author as regular migrants, he thinks that the Pied Flycatcher, Blue-headed Wagtail, and Stone Curlew must now be considered to hold a very doubtful position in the county list.

The characteristic birds of the High Peak district are the Ring Ouzel, Dipper, Grey Wagtail, Twite, Merlin, Common Sandpiper, Curlew, Golden Plover, and probably the Dunlin, but the Dipper appears to be less common than formerly. The Black Redstart has been observed in Derbyshire but once and has probably been overlooked, the frequency of its occurrence in Nottinghamshire pointing to this conclusion. The Dartford Warbler has also been once obtained—a pair on Melbourne Common in the winter of 1840.

The Fire-crested Wren, although recorded but twice, is probably more frequent than is generally supposed, so also the Pied Flycatcher as a summer resident or on migration. The Red-backed Shrike is local, and the Woodchat Shrike has occurred only in a single instance. The Goldfinch, Stonechat, and Woodlark are declining. The information referring to the Cirl Bunting is meagre and

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unsatisfactory. The Raven is extinct as a breeder, and praiseworthy attempts to reinstate him in his ancient haunts have failed. Grey Crows follow the Trent from the east coast, and are common in the south-east of the county. The Bee-eater, Roller, and Hoopoe have all been obtained, the latter frequently, so also the Golden Oriole. Attractive in plumage, and strangers, they are invariably hunted down and slain.

A few pairs of Short-eared Owls breed annually on the moors of the Peak, and there is good evidence that the Snowy Owl has been seen twice, and the Eagle Owl once. The Hen Harrier has probably not nested anywhere in the county during the last quarter of a century, and the Common Buzzard is practically extinct. In 1668, according to Willughby, a pair of Golden Eagles had a nest in a hamlet called 'Woodlands,' in the High Peak, but we have no record when they ceased to breed in the county. Glover, in his 'History of the County of Derby,' 1829, records the Goshawk in his list of birds, and Pilkington, writing in 1789, includes the Kite as one of the common birds of prey. There is good evidence that the Hobby nested as recently as 1891, and a few pairs of Merlin still continue to breed in the High Peak.

Reference has already been made to the numerous additions, from time to time, made to the county list of birds, from the valley of the Trent; these include such rarities as the Purple Heron, Squacco Heron, and Glossy Ibis. The Common Bittern, too, is most often observed in the Trent valley. Five species of Geese, two of Swan, and twelve of Duck, have been obtained from the same waters; the Goosander is common in winter, the Merganser rare, and the Smew an occasional visitor. The Turtle Dove is a decidedly increasing species; the Black Grouse has become a comparatively local bird; Dotterel are annual spring visitors to the Peak. The Golden Plover breeds not uncommonly on the high moors, so probably the Dunlin, although the nest has not yet been found. The Grey Plover, Oystercatcher, Avocet, Grey Phalarope, Knot, Sanderling, Ruff, Green Sandpiper, Greenshank, Bar-tailed Godwit, and Whimbrel have all been got from Trent side. The Ringed Plover passes up this river valley, in April and May, with great regularity, returning again in August; these appear to belong to a small race which, probably, comes to us from the south in the spring, and may be distinguished by their smaller size, darker mantle, and more sharply defined and brighter colouration. It is satisfactory to learn that during the last twenty years, the Redshank has established itself as a breeding species and appears to be annually increasing; the same may be said of the neighbouring county of Nottingham. Mr. Whitlock

records eight Terns, seven Gulls, and three Skuas, but the evidence, as the author admits, in connection with the occurrences of the Roseate Tern, the Pomatorhine and Buffon's Skuas, is anything but satisfactory.

The Great Northern and the Red-throated Divers have both been seen or obtained on several occasions, and all the five Grebes are included in Mr. Whitlock's list from the Trent. There is one example of the Fulmar recorded, and several storm-driven Fork-tailed Petrels and Stormy Petrels have been obtained. The Manx Shearwater has so frequently occurred, both in Derbyshire and Nottinghamshire, that its presence is suggestive of an overland route of migration followed by this species along the course of the river.

The volume contains an excellent map and the illustrations of Derbyshire scenery add much to the interest of the work. Mr. Whitlock, with the assistance of his colleague, Mr. A. S. Hutchinson, whose notes are incorporated with the text, has succeeded in collecting and recording a great amount of local information on birds, with the result that the material has been dealt with thoroughly well and in a most conscientious and painstaking manner. The volume is, we consider, a valuable addition to the growing list of county faunas, which will be referred to for many years as a text book of its special subject. The author himself admits it is by no means exhaustive, and that the only thoroughly worked districts in the county are the Trent valley and High Peak, leaving much yet to be done. It is a beginning, however, and the readers of the book will admit a very good one.

J. C.

NOTES AND NEWS.

We see that our old friend Mr. George Masee, the author of the 'British Fungus Flora,' has received the appointment at the Royal Herbarium at Kew which Dr. Cooke vacated some time ago.

The recently issued 'one-inch' maps of the Geological Survey include quarter-sheet 101 N.E., embodying much intricate work in the northern part of the Skiddaw Slates and the succeeding Volcanic Series between Carrock Fell and Cockermouth, with the Carboniferous, Permian, and Trias farther north.

We are indebted to the President of the Geological Society (Mr. W. H. Hudleston, F.R.S., a former president of the Y.N.U.) for a copy of his anniversary address. It is a review of work in British stratigraphical geology brought before the Society during the last seven years. Among other north-country papers, appreciative notice is given to those of Mr. Lamplugh on the Drifts of Flamborough Head and the Clays of Speeton, Mr. W. Hill on the Cretaceous of Lincolnshire and Yorkshire, Mr. T. Roberts on the Upper Jurassic of Lincolnshire, and Messrs. Wilson and Tate on the Durham salt district. The Palæozoic rocks are reserved for future notice.

THE HEMIPTERA HETEROPTERA OF THE BRITISH ISLANDS.

The Hemiptera Heteroptera of the British Islands. EDWARD SAUNDERS,
F.L.S. L. Reeve & Co., London. 14s.

THIS is another of the admirable series of works on Entomology now being published by Messrs. Reeve; and the name of its author is at once a sufficient guarantee that the book throughout is excellent. It commences with a plate showing the structure of hemiptera, and a table fully describing it. Then follows a lengthy 'Introduction,' in which the anatomy of these creatures is clearly put before the student, concluding with an account of the methods of collecting and mounting Hemiptera or 'Bugs' as they are more familiarly known. The book proper consists of concise but clear descriptions of all the species known to occur in Britain up to date; together with localities of all species which are not common almost everywhere. As such it is of course invaluable to every student of this most interesting order of insects. We think an improvement would have been to have added a classified synonymic list of the species; and the study of the order has advanced so much of late years, that a statement of the progress made since the publication of Messrs. Douglas and Scott's work would also have added to its interest. These, however, are comparatively small matters, and do not detract from the great value of the work.

It is printed in a good, clear type, on excellent paper, and nicely got up. There is also a larger edition, containing 31 coloured plates, published at 48s.—G.T.P.

NOTES AND NEWS.

Mr. R. J. Harvey Gibson, M.A., F.L.S., of the Liverpool University College, began in the 'Journal of Botany' for April 1892 a series of 'Observations on British Marine Algæ,' the first instalment treating of the Antheridia of *Polysiphonia elongella*, the Escape and Conjugation of Zoogametes in *Enteromorpha compressa* and the Development of Spores of British Marine species of *Chantransia*.

'The Life of a Foxhound,' by Jno. Mills (3rd edition: Simpkin, Marshall, Hamilton, Kent & Co., 1892), of which a copy lies before us, is decidedly a clever book, which it is pleasing to note has reached a third edition. The idea of an animal telling its own biography is not by any means a new one, and 'Ringwood,' the foxhound in question, gives us his story in an entertaining manner. The book is well illustrated, and is worthy of attention when the mind requires rest from a more serious subject.

Yet another of the valuable papers in which Mr. William West, F.L.S., with the able assistance, both literary and artistic, of his son, Mr. G. S. West, is working out the geographical range of our freshwater algæ, appears in the April number of the Journal of Botany, under the unassuming title of 'Notes on Scotch Fresh-water Algæ,' illustrated by a plate drawn by Mr. G. S. West. Some of the material was contributed by Mr. E. Naylor, of Bradford, in the form of a gathering in the Orkneys, but most of it is the result of Mr. West's own indefatigable research among the Scottish mountains.

NOTE—FISHES.

Codfish and its Appetite.—On May 9th a large Codfish (*Gadus morrhua*) was caught at Flamborough by Benjamin Cross, fisherman, with 59 fish-hooks in its stomach; when taken it was only in poor condition; the hooks were middle size, and what are called tinned hooks. They are now in the possession of Mr. John Duke.—MATTHEW BAILEY, Flamborough, May 19th, 1893.

NOTE—MAMMALIA.

Badger near Nottingham.—As this animal (*Meles taxus*) is now becoming scarce, it may be worth while to record its occurrence near this town. An adult male was trapped by the Trent side at Clifton on May 18th, and is now in the Nottingham Museum. A second specimen, presumably a female, was seen in the same locality.—J. W. CARR, University College, Nottingham, June 1st, 1893.

NOTES—ORNITHOLOGY.

Turtle Dove and Nightingale near Goole.—Mr. Thomas Bunker has kindly sent me a very fine specimen of the Turtle Dove (*Turtur communis*) which was obtained at Rawcliffe on May 11th. Mr. Bunker states that he has once before had a Turtle Dove sent from the same locality.

A pair of Nightingales (*Daulias luscinia*) have this year taken up their abode within two miles of Goole. I trust they will be left in peace.—RILEY FORTUNE, Harrogate, May 17th, 1893.

Lesser Whitethroat at Bakewell.—In 'Birds of Derbyshire,' Mr. Whitlock states, with regard to the Lesser Whitethroat (*Sylvia curruca*) that 'Mr. Storrs Fox has not recognised it near Bakewell.' On Whit Friday, May 29th, 1885, I found two nests with eggs, not a mile from Bakewell Church. In each case the nest was in a wild rose bush. One nest had five eggs and the other, I think, had four. I write this from memory, as I have no note of the circumstance by me.—F. BROWNSWORD, Heaton Moor, Stockport, June 4th, 1893.

Lesser Tern in Lancashire.—Mr. Mitchell, in his 'Birds of Lancashire,' states that the Lesser Tern (*Sterna minuta*) used to breed between Lytham and Blackpool, but 'the increase of population is sufficient to account for its disappearance.' In 1891 I found from fifteen to twenty nests of this bird on the beach between Lytham and St. Anne's-on-the-Sea. I am sorry to add that, as far as I could see, not a single clutch was hatched off. The boys in the neighbourhood got to hear of the nests, and searched the beach systematically every evening for a fortnight. In 1892 I did not see a single bird.—F. BROWNSWORD, Heaton Moor, Stockport, June 4th, 1893.

The Chiffchaff in the Lake District.—During a recent visit to the Lake District I was rather surprised to find so many Chiffchaffs (*Phylloscopus collybita*) breeding in the woods. At Grange-over-Sands, my first stopping-place, there were quite a dozen pairs in the spinneys on the hill side at the back of the town. In the immediate neighbourhood I met with pairs at Levens Hall, and also many others in the plantations at Witherslack. After leaving Grange I explored the country lying between Seascale and the adjacent fells. Chiffchaffs were not so plentiful as at the former place, but I met with pairs at Muncaster, Gosforth, Strands, and also in a wood at the outlet of Wastwater. I spent several days about Keswick, but was not there long enough to make a thorough search, confining my rambles for the most part to the woods near Portinscale. Here I only met with a single pair. In view of my friend the Rev. H. A. Macpherson's remarks on the Chiffchaff in his recently published 'Vertebrate Fauna of Lakeland,' my observations either point to the fact of 1893 being an exceptional year for this species, or to a further extension north of its range. The Willow Wren (*Phylloscopus trochilus*) and the Wood Warbler (*Phylloscopus sibilatrix*) I met with in varying abundance. Mr. Macpherson's remark that the latter species is sufficiently scarce to make it interesting is a very happy one. I noticed in nearly every locality that where a Chiffchaff was singing a Blackcap (*Sylvia atricapilla*) also haunted the wood.—F. B. WHITLOCK, Beeston, Notts, June 15th, 1893.

NOTES ON THE FRESH-WATER ALGÆ OF THE EAST RIDING OF YORKSHIRE,

WILLIAM WEST, F.L.S.,

Assisted by G. S. WEST (*National Scholar in Biology*).

IN 1878 and 1879, I made some small gatherings of Algæ on Riccall Common, which were not exhaustively examined until recently. They have proved to be rich in Desmids but poor in Diatoms. In 1892, my sons and I made a fair number of gatherings in a walk from Beverley, through Tickton and Routh, past Meaux Abbey to Waghen and Sutton: these would have proved richer had they been collected later in the season, but as it is, they are fairly rich in Diatoms. Mr. W. H. Youdale, F.R.M.S., of Cockermouth, kindly made a good gathering for me at Hornsea Mere, and I have also to thank Mr. J. Beanland, of Bradford, who collected for me at Loftsome Bridge near Wressle and at Newsholme near Howden. The genera *Epithemia* and *Eunotia* are poorly represented, though the scarcity of species of the latter genus is not to be wondered at from such a flat district.

ALGÆ.

CLASS CONFERVOIDEÆ HETEROGAMÆ.

ORDER CÆDOGONIACEÆ.

Cædogonium platygynum Wittr. Riccall Common,
Crass. cell. veg. 9·6—11 μ ; altit. 3—4 plo major;
„ oogon. 26 μ ; „ 20 μ ;
„ oospor. 21 μ ; „ 16·3 μ .

CLASS CONFERVOIDEÆ ISOGAMÆ.

ORDER CONFERVACEÆ.

Conferva bombycina Ag. forma **genuina** Wille. Waghen;
near Meaux Abbey; Newsholme.
Conferva bombycina forma **minor** Wille. Beverley; Riccall
Common; Routh; near Meaux Abbey; Waghen.
Conferva floccosa (Vauch.) Ag. Waghen.
Rhizoclonium flavicans Jurg. Newsholme.
Chætophora pisiformis (Roth.) Ag. Beverley.
Draparnaldia plumosa Ag. Beverley.

- Penium cucurbitinum* Biss. Riccall Common.
- Penium minutum* (Ralfs) Cleve. Riccall Common.
- Cylindrocystis Brebissonii* Menegh. Riccall Common.
- Cylindrocystis crassa* D. By. East of Selby.
- Tetmemorus lævis* (Kütz.) Ralfs. East of Selby.
- Mesotænum micrococcum* (Kütz.) Kirchn. East of Selby.
- Euastrum ansatum* Ehrnb. Riccall Common.
- Euastrum pectinatum* Bréb. Riccall Common.
- Euastrum rostratum* Ralfs. Riccall Common.
- Euastrum elegans* (Bréb.) Kütz. Riccall Common.
- Euastrum erosum* Lund. var. **notabile** West. Riccall Common.
- Euastrum binale* (Turp.) Ralfs. Riccall Common.
- Euastrum binale* var. **elobatum** Lund. Riccall Common.
- Euastrum denticulatum* (Kirchn.) Gay. Riccall Common.
- Cosmarium quadratum* Ralfs. Riccall Common.
- Cosmarium Hammeri* Reinsch. Riccall Common.
- Cosmarium granatum* Bréb. Hornsea Mere; Riccall Common.
- Cosmarium granatum* var. **subgranatum** Nord. Hornsea Mere.
Long. 26.5—27.5 μ ; lat. 19.8—21.3 μ ; lat. isthm. 6.6—8.3 μ .
- Cosmarium pyramidatum* Bréb. Riccall Common.
- Cosmarium pseudopyramidatum* Lund. Riccall Common.
- Cosmarium galeritum* Nord. Riccall Common.
- Cosmarium Phaseolus* Bréb. Riccall Common.
- Cosmarium bioculatum* Bréb. Riccall Common.
- Cosmarium tinctum* Ralfs. Riccall Common.
- Cosmarium succisum* West. Riccall Common.
- Cosmarium impressulum* Elfv. Hornsea Mere.
- Cosmarium venustum* (Bréb.) Arch. Riccall Common; Hornsea Mere.
- Cosmarium Meneghinii* Bréb. Riccall Common; Hornsea Mere; Newsholme.
- Cosmarium Meneghinii* Bréb. forma **octangularis** Wille.
Riccall Common; Hornsea Mere.
- Cosmarium Meneghinii* Bréb. var. **Wollei** Lagerh. Riccall Common.
- Cosmarium Regnesii* Reinsch. Riccall Common, abundant.
Long. 8.3—12.1 μ ; lat. 9.3—13.5 μ ; lat. isthm. 4.4—5.8 μ .
- Cosmarium substriatum* Nord. Riccall Common; Hornsea Mere.

- Cosmarium undulatum* Corda. Riccall Common.
- Cosmarium tetraophthalmum* (Kütz.) Bréb. Riccall Common.
- Cosmarium tetraophthalmum* var. **Lundellii** Wittr. Hornsea Mere.
- Cosmarium margaritiferum* (Turp.) Menegh. Riccall Common; Hornsea Mere.
- Cosmarium Portianum* Arch. Riccall Common.
- Cosmarium reniforme* (Ralfs.) Arch. Riccall Common.
- Cosmarium punctulatum* Bréb. Riccall Common.
- Cosmarium subpunctulatum* Nord. Riccall Common.
- Cosmarium subpunctulatum* Nord. forma cum apicibus minus late truncatis. Hornsea Mere.
- Cosmarium Botrytis* (Bory) Menegh. Hornsea Mere; Riccall Common; Newsholme; Loftsome Bridge near Wressle.
- Cosmarium formosulum* Hoff. Riccall Common.
- Cosmarium præmorsum* Bréb. Riccall Common.
- Cosmarium Broomei* Thw. Riccall Common.
- Cosmarium confusum* Cooke var. **regularius** Nord. Riccall Common.
- Cosmarium ornatum* Ralfs. Riccall Common.
- Cosmarium moniliforme* (Turp.) Ralfs. Riccall Common.
- Cosmarium moniliforme* forma **panduriformis** Heimerl. Riccall Common. Long. 17.7μ ; lat. 10μ ; lat. isthm. 7.4μ .
- Xanthidium aculeatum* Ehrnb. Riccall Common.
- Xanthidium cristatum* Bréb. Riccall Common.
- Arthrodesmus octocornis* Ehrnb. Riccall Common.
- Arthrodesmus Ralfsii* West. Riccall Common.
- Arthrodesmus convergens* Ehrnb. Riccall Common.
- Staurastrum dejectum* Bréb. Riccall Common.
- Staurastrum connatum* (Lund.) Roy. et Biss. Riccall Common.
- Staurastrum apiculatum* Bréb. Riccall Common.
- Staurastrum Dickiei* Ralfs. Riccall Common.
- Staurastrum brevispinum* Bréb. Riccall Common.
- Staurastrum cuspidatum* Bréb. Riccall Common.
- Staurastrum megacanthum* Lund. Riccall Common.
- Staurastrum lunatum* Ralfs. Riccall Common.
- Staurastrum avicula* Bréb. Riccall Common.
- Staurastrum teliferum* Ralfs. Riccall Common.
- Staurastrum asperum* Bréb. Riccall Common.

- Staurostrum muticum** Bréb. Riccall Common.
Staurostrum orbiculare (Ehrnb.) Ralfs. Riccall Common.
Staurostrum orbiculare var. **depressum** Roy. et Biss. Riccall
 Common.
Staurostrum alternans Bréb. Riccall Common.
Staurostrum dilatatum Ehrnb. Riccall Common.
Staurostrum brachiatum Ralfs. Riccall Common.
Staurostrum tricorne (Bréb.) Menegh. Riccall Common.
Staurostrum cyrtocerum Bréb. Riccall Common.
Staurostrum polymorphum Bréb. Riccall Common.
Staurostrum gracile Ralfs. Riccall Common.
Staurostrum paradoxum Meyen. Riccall Common.
Staurostrum controversum Bréb. Riccall Common.
Staurostrum vestitum Ralfs. Riccall Common.
Staurostrum oxyacanthum Arch. Riccall Common.
Staurostrum tetracerum (Kütz.) Ralfs. Riccall Common.

CLASS MULTINUCLEATÆ.

ORDER SIPHONEÆ.

- Vaucheria sericea** Lyngb. Beverley.
Vaucheria sessilis (Vauch.) DC. Newsholme; near Sutton;
 near Meaux Abbey.

CLASS CŒNOBIEÆ.

ORDER PANDORINEÆ.

- Pandorina morum** Müll. Hornsea Mere.
Chlamydococcus pluvialis A.Br. Beverley.

ORDER PEDIASTREÆ.

- Pediastrum Boryanum** (Turp.) Menegh. Hornsea Mere.
Pediastrum gracile A.Br. Riccall Common.
Pediastrum tetras (Ehrnb.) Ralfs. *Dispositio cellularum* 4.
 Riccall Common.

ORDER SORASTREÆ.

- Staurogenia rectangularis** (Näg.) A.Br. Hornsea Mere.
Cœlastrum sphæricum Næg. Riccall Common.
Cœlastrum microporum Næg. Riccall Common.

PROTOPHYTA.

GROUP SCHIZOPHYCEÆ.

CLASS PROTOCOCCOIDEÆ.

ORDER EREMOBIEÆ.

- Ophiocytium cochleare** (Eich.) A.Br. Near Meaux Abbey ;
Riccall Common ; Waghen ; Routh ; Newsholme.
- Dictyosphærium Ehrenbergianum** Näg. Hornsea Mere ;
Newsholme.
- Hydrianum heteromorphum** Reinsch. Newsholme.
- Nephrocytium Agardhianum** Näg. Riccall Common.
- Nephrocytium Nägelii** Grun. Newsholme.
- Oocystis solitaria** Wittr. Hornsea Mere.

ORDER PROTOCOCCACEÆ (incl. *Palmellaceæ*).

- Pleurococcus vulgaris** Menegh. Common.
- Chlorococcum gigas** (Kütz.) Grun. Near Meaux Abbey.
- Glæocystis ampla** (Kütz.) Rabh. Riccall Common ; Newsholme.
- Glæocystis vesiculosa** Näg. Riccall Common ; Routh ; Newsholme.
- Schizochlamys gelatinosa** A.Br. Near Meaux Abbey.
- Botryococcus Braunii** Kütz. Hornsea Mere.
- Urococcus insignis** (Hass.) Kütz. Near Sutton.
- Rhaphidium polymorphum** Fres. var. **falcatum** (Corda) Rabh.
Riccall Common.
- Scenedesmus quadricauda** (Turp.) Bréb. Hornsea Mere ;
Loftsome Bridge, near Wressle.
- Scenedesmus acutus** Meyen. Riccall Common ; Hornsea
Mere.
- Tetraëdron regulare** Kütz. Riccall Common.

CLASS PHYCOCHROMOPHYCEÆ.

SUB-CLASS NOSTOCHINEÆ.

ORDER NOSTOCACEÆ.

- Nostoc microscopicum** Carm. Riccall Common.
- Anabæna Flos-aquæ** Bréb. Hornsea Mere.

Crass. cell. 5μ ; crass. heterocyst. $5.5-7.7\mu$; long. spor.
 $21-25\mu$; lat. spor. $11-12\mu$.

Anabæna oscillarioides Bory. (Born. et Flah., Revis. des Nostoc. Heterocyst., quatr. et. dernier fragm., p. 233; *A. Ralfsii* Cooke, Brit. Freshw. Alg., p. 237, tab. 94, fig. 1.) Newsholme. A slightly smaller form.

Crass. cell. $3.5-4\mu$; crass. heterocyst. $6-6.5\mu$; long. heterocyst. $6.5-7.7\mu$; long. spor. $17.3-34.5\mu$; lat. spor. $9.5-10\mu$.

Aphanizomenon Flos-aquæ (L.) Ralfs. forma paullo minor. Riccall Common.

Crass. trichom. 4μ ; crass. spor. $5-8\mu$; long. spor. $30-50\mu$.

ORDER SCYTONEMACEÆ.

Tolypothrix lanata (Desv.) Wartm. Riccall Common.

Crass. fil. = $13.5-16\mu$; crass. trichom. $8.6-9.6\mu$; long. heterocyst. $9-12\mu$; lat. heterocyst. $11.5-15\mu$.

Tolypothrix tenuis Kütz. Riccall Common.

ORDER OSCILLARIACEÆ.

Oscillaria Frolichii Kütz. Beverley; Routh; Loftsome Bridge near Wressle.

Oscillaria limosa (Roths.) Ag. Waghen.

SUB-CLASS CHROOCOCCACEÆ.

ORDER CHROOCOCCACEÆ.

Chroococcus turgidus (Kütz.) Näg. Riccall Common; Hornsea Mere.

Microcystis protogenita (Bias.) Rabh. Routh.

Clathrocystis æruginosa (Kütz.) Henfr. Hornsea Mere.

Merismopedia glauca (Ehrnb.) Näg. Riccall Common.

Merismopedia punctata Meyen. Riccall Common.

Tetrapedia Reinschiana Arch. Riccall Common.

CLASS DIATOMACEÆ.

Cyclotella operculata (Ag.) Kütz. Loftsome Bridge near Wressle.

Melosira varians Ag. Beverley; Newsholme.

Surirella panduriformis Sm. Tickton.

Surirella biseriata (Ehrnb.) Bréb. Beverley.

Surirella angusta Kütz. Near Meaux Abbey.

- Surirella splendida** (Ehrnb.) Kütz. Beverley.
- Surirella ovata** Kütz. Routh ; Beverley ; near Meaux Abbey.
- Surirella salina** Sm. Waghén.
- Surirella minuta** Bréb. Routh ; Beverley ; Newsholme ; Tickton ; near Meaux Abbey ; Waghén.
- Surirella pinnata** Sm. Beverley ; Routh ; Newsholme.
- Cymatopleura elliptica** (Bréb.) Sm. Routh.
- Cymatopleura Solea** (Bréb.) Sm. Beverley ; Tickton ; Newsholme ; Routh ; Loftsome Bridge near Wressle.
- Epithemia turgida** (Ehrnb.) Kütz. Newsholme.
- Epithemia Sorex** Kütz. Hornsea Mere.
- Epithemia Argus** (Ehrnb.) Kütz. Newsholme.
- Eunotia incisa** Greg. Riccall Common.
- Eunotia bidens** (Greg.) Rabh. Riccall Common.
- Cymbella cuspidata** Kütz. Beverley ; Tickton.
- Cymbella ventricosa** Ag. Routh ; near Sutton ; Beverley.
- Cocconema lanceolatum** Ehrnb. Beverley.
- Cocconema cymbiforme** (Kütz.) Ehrnb. Riccall Common ; Beverley.
- Cocconema Cistula** Hempr. Beverley ; Loftsome Bridge near Wressle.
- Encyonema cæspitosum** Kütz. Tickton ; Routh ; Beverley.
- Amphora minutissima** Sm. Beverley.
- Amphora ovalis** Kütz. Routh ; Beverley ; Loftsome Bridge near Wressle ; Tickton.
- Cocconeis Pediculus** Ehrnb. Beverley.
- Cocconeis placentula** Ehrnb. Hornsea Mere ; Routh ; Newsholme ; Beverley ; Loftsome Bridge near Wressle.
- Achnanthidium microcephalum** Kütz. Tickton ; Waghén ; Routh.
- Achnanthidium lanceolatum** Bréb. Beverley ; Routh ; near Meaux Abbey ; Waghén.
- Achnanthes exilis** Kütz. Near Meaux Abbey ; Newsholme ; Tickton ; Beverley.
- Rhoicosphenia curvata** (Kütz.) Rabh. Newsholme.
- Odontidium hiemale** (Lyngb.) Kütz. Beverley.
- Odontidium mutabile** Sm. Beverley ; Loftsome Bridge near Wressle ; Waghén.
- Odontidium Tabellaria** Sm. Beverley.

- Fragilaria capucina** Desmaz. Tickton; near Meaux Abbey; Newsholme; Beverley; Loftsome Bridge near Wressle.
- Diatoma vulgare** Bory. Loftsome Bridge near Wressle.
- Diatoma elongatum** Ag. Beverley; Newsholme; Loftsome Bridge near Wressle.
- Synedra pulchella** Kütz. Tickton; Loftsome Bridge near Wressle; Beverley; Riccall Common.
- Synedra minutissima** Kütz. ?; Sm. Diat. I. fig. 87. Newsholme.
- Synedra Vaucheriæ** Kütz. Newsholme.
- Synedra Ulna** Ehrnb. Loftsome Bridge near Wressle; Beverley; Waghen.
- Synedra splendens** Kütz. Beverley; Routh.
- Synedra splendens** Kütz. var. *æqualis* (Kütz.) Rabh. Riccall Common.
- Synedra capitata** Ehrnb. Beverley.
- Synedra Acus** Kütz. Loftsome Bridge near Wressle; Newsholme; near Meaux Abbey.
- Tryblionella angustata** Sm. Newsholme; Beverley.
- Nitzschia Amphioxys** (Ehrnb.) Sm. Routh; near Meaux Abbey; Waghen.
- Nitzschia constricta** (Kütz.) Pritch. Beverley; Loftsome Bridge near Wressle; Tickton; Routh; near Meaux Abbey; Waghen.
- Nitzschia parvula** Sm. Riccall Common; Beverley; Waghen.
- Nitzschia sigmoidea** (Nitzsch) Sm. Beverley; Routh.
- Nitzschia curvula** (Ehrnb.) Sm. Routh; Beverley; Waghen.
- Nitzschia linearis** (Ag.) Sm. Beverley; Tickton; Routh; near Meaux Abbey.
- Nitzschia tenuis** Sm. Beverley; Newsholme; Loftsome Bridge near Wressle; Tickton; Routh.
- Nitzschiella Closterium** (Ehrnb.) Rabh. Beverley.
- Nitzschiella acicularis** (Kütz.) Rabh. Routh; near Sutton; Beverley; Loftsome Bridge near Wressle.
- Nitzschiella gracilis** (Bréb.) Rab. (= *Nitzschia Tenia* Sm.). Waghen.
- Navicula cuspidata** Kütz. Riccall Common; Loftsome Bridge near Wressle.
- Navicula limosa** (Kütz.) Grun. Beverley.
- Navicula inflata** Kütz. Waghen; Tickton; Beverley.

- Navicula amphisbæna** Bory. Waghen; Beverley; Loftsome Bridge near Wressle.
- Navicula sphærophora** Kütz. Near Meaux Abbey; Beverley.
- Navicula pusilla** Sm. Tickton; Routh; Beverley; near Meaux Abbey; Waghen.
- Navicula anglica** Ralfs. Loftsome Bridge, near Wressle.
- Navicula rhynchocephala** Kütz. Beverley; Loftsome Bridge, near Wressle; Waghen; Tickton; near Meaux Abbey.
- Navicula Dirhynchus** Ehrnb. Near Sutton; Routh; Beverley.
- Navicula Amphirhynchus** Ehrnb. Beverley.
- Navicula producta** Sm. Loftsome Bridge, near Wressle.
- Navicula appendiculata** Kütz. forma **exilis** Grun. Newsholme.
- Navicula exilis** (Kütz.) Grun. Near Meaux Abbey; Beverley; Routh; Waghen; Tickton; Loftsome Bridge, near Wressle; Newsholme.
- Navicula angustata** Sm. Near Meaux Abbey; Newsholme; Waghen; Beverley; Tickton.
- Navicula cryptocephala** Kütz. Tickton; Waghen.
- Navicula veneta** Kütz. Newsholme.
- Navicula dicephala** Ehrnb. Near Meaux Abbey; Beverley; Routh; Waghen; Tickton.
- Pinnularia nobilis** Ehrnb. Beverley.
- Pinnularia viridis** (Ehrnb.) Rabh. Beverley; Loftsome Bridge, near Wressle; near Meaux Abbey; Tickton; near Sutton; Newsholme.
- Pinnularia peregrina** Ehrnb. Tickton.
- Pinnularia radiosa** (Kütz.) Rabh. Beverley; Riccall Common; Tickton; near Meaux Abbey; Routh; Waghen.
- Pinnularia radiosa** (Kütz.) Rabh. var. **silesiaca** (Bleisch) Rabh. Beverley.
- Pinnularia viridula** (Kütz.) Rabh. Tickton.
- Pinnularia mesolepta** Sm. Tickton; Beverley; near Meaux Abbey.
- Pinnularia Brebissonii** (Kütz.) Rabh. Tickton; Beverley; near Meaux Abbey.
- Frustulia saxonica** Rabh. forma **aquatica** Rabh. Beverley; Waghen.
- Pleurosigma attenuatum** (Kütz.) Sm. Beverley.
- Pleurosigma lacustre** Sm. Hornsea Mere; Tickton; Loftsome Bridge near Wressle; Beverley; Waghen; Newsholme.

- Pleurosigma Spencerii** (Quekett) Sm. Beverley; Routh.
Stauroneis Phœnicenteron (Nitzsch) Ehrnb. Tickton.
Stauroneis anceps Ehrnb. Routh; Tickton.
Pleurostaurum Legumen (Ehrnb.) Rabh. Beverley.
Gomphonema tenellum Kütz. Near Meaux Abbey; Routh;
 Waghen; Beverley; near Sutton; Newsholme.
Gomphonema dichotomum Kütz. Waghen; near Sutton;
 near Meaux Abbey; Routh; Tickton.
Gomphonema capitatum Ehrnb. Loftsom Bridge near
 Wressle.
Gomphonema constrictum Ehrnb. Loftsom Bridge near
 Wressle; Newsholme.
Gomphonema acuminatum Ehrnb. Near Sutton; Newsholme;
 Loftsom Bridge near Wressle.
Gomphonema olivaceum (Lyngb.) Kütz. Near Sutton;
 Newsholme; near Meaux Abbey.
Gomphonema intricatum Kütz. Loftsom Bridge near Wressle.
Meridion circulare (Grev.) Ag. Beverley; Routh; Loftsom
 Bridge near Wressle; Tickton; near Meaux Abbey.
Tabellaria flocculosa (Roth) Kütz. Riccall Common.

NOTES AND NEWS.

We are glad to see that Mr. J. G. Goodchild's engagements at Edinburgh do not prevent the continuance of his numerous papers on the geology of the Eden valley and neighbouring districts. Among a number of reprints which he has sent us is one of his 'Notes on the Water Supply of Edenside,' from the latest number of the Transactions of the Cumberland and Westmorland Association. Another in the list is entitled 'Notes on some of the Limestones of Cumberland and Westmorland,' and gives the author's views on the formation of limestone in general, as well as an account of those in the area considered. As usual, Mr. Goodchild employs the stratigraphical materials to reconstruct in imagination the physical geography of the past, a fascinating, if rather hazardous branch of geology.

The recent appearance of a third edition of Stoddart's 'Angler's Companion' (Simpkin, Marshall, Hamilton, Kent & Co., 1892), which the publishers have sent us for notice, is another evidence of the perennial popularity of the gentle craft. A sport which has borne the appearance of some seven hundred different works, practical and otherwise, would appear to be in some danger of coming to a stop through sheer exhaustion of the subject. But of the making of angling books there would appear to be no end, and so keen an enthusiast, and so excellent an observer and angler as Stoddart, is in no danger of being forgotten among a crowd of friendly rivals. The present revised edition differs in no material respect from the two former, the book having long been a standard work with North country anglers for salmon, trout and perch. Since Stoddart's day, however, the more sportsmanlike feeling everywhere apparent which objects to the use of baits, not only very deadly, but very destructive, in a double sense, has prohibited the use of salmon roe, and other compounds, and the portions of the book dealing with these matters have naturally been omitted. The most accomplished angler may still find something new in a perusal of these familiar pages.

THE YORKSHIRE NATURALISTS' UNION AT AYSGARTH.

THE first meeting of the Yorkshire Naturalists' Union for the present year took place on Whit-Monday, May 22nd. The day was gloriously fine, and the rains of the previous week had but added to the beauty of the scenery, and caused an exhilarating feeling of freshness to pervade everything.

The district planned for investigation comprised the neighbourhood of the villages of Aysgarth and Carperby, the lower slopes of Penhill, and the picturesque dales of Bishopdale and Waldendale.

Not content with a single day, many members passed the week-end in the district, and certainly a better spot for spending a few days could hardly be desired, and these had been able to obtain a fair quantity of specimens before the rest of the members arrived on the Monday.

Permission had been kindly given by Lord Bolton, of Bolton Hall, and Mr. Thomas Bradley, of Bear Park, for the investigation of their estates, but as it was the nesting season the members abstained, at Lord Bolton's request, from visiting the moorlands.

The river banks in the immediate neighbourhood of Aysgarth were well investigated, and though not a few of the naturalists preferred to take independent routes, many took the route which followed the river banks from Yore Mills to the stepping-stones, and as far as the stagnant pools in the Strand pasture, then leaving the river bank and working back by way of Carperby. The Freeholders' Wood at Carperby was found very productive by a party of botanists under the leadership of Miss Bradley, of Carperby, an accomplished botanist; whilst the vertebrate zoologists found a most valuable guide in Mr. Edward Chapman, the veteran naturalist of the same village, who possesses a most extensive knowledge of the birds and mammals of the district, and whose list of Wensleydale birds, published in the 'Naturalist' a few years ago, was the standard of reference. The geologists were fortunate enough to secure the services of Mr. J. G. Goodchild, F.G.S., of the Geological Survey of England and Wales, by whom much of the work of surveying this district for the Geological Map had been done. By five o'clock the majority of the members had found their way to the Palmer Flatt Hotel, where a substantial meat tea had been provided.

After tea, the evening being fine, the general meeting was held out on the lawn, Mr. John Gerrard, M.B.O.U., occupying the chair. The chairman, in his opening remarks, brought forward in a forcible

manner the good the Y.N.U. was doing in systematic researches in all the branches of natural history, and the fact that much good and useful material was lying unpublished, owing to the lack of funds, and urged upon each member individually to increase the number of members so that this work could be accomplished.

The minutes having been taken as read, the next duty was the election of the following new members:—Mr. Reginald H. Barker, Scarborough; Mr. Eugene Bean, York; Mr. Joseph Coe, Hull; Mr. Robert Dutton, York; Mr. Chas. E. Elmhirst, York; Mr. C. N. Goode, Harrogate; Mr. Arnold Greenwood, Halifax; Mr. Leonard Hawkesworth, Leeds; Mr. Donald S. Mackay, York; Mr. F. W. Mills, F.R.M.S., Huddersfield; Mr. Stephen Parkinson, Leeds; Mr. Edward Peake, M.A., Giggleswick; Mr. John Sayner, Harrogate; Mr. Tom Stevenson, North Stainley; Mr. Joseph R. Waldby, Harrogate; Mr. J. W. Warwick, Harrogate; Mr. Arthur Wilkinson, York; Mr. H. J. Wilkinson, York.

The list of societies was then called over, the following sixteen being represented:—Wakefield and Bradford Naturalists' Societies, Leeds Naturalists' Club, Leeds Geological Association, Dewsbury Naturalists' Society, Malton Naturalists' Society, Ripon Naturalists' Club, Cleveland Naturalists' Club, Harrogate and District Naturalists' and Scientific Society, Thirsk Natural History Society, Craven Naturalists' Association, Ellesmere School Natural History Society, Hull Scientific Club, Scarborough Field Naturalists' Society, Darlington Naturalists' Field Club, and Leeds Co-operative Field Club, numbering altogether about seventy members.

A hearty vote of thanks was then passed to Lord Bolton, of Bolton Hall, and Mr. Thomas Bradley, of Bear Park, for granting permission to the members to visit their estates, and also to the leaders of the various parties, after which the sectional reports were then called for.

For the Vertebrate Section, its secretary, Mr. Riley Fortune, F.Z.S., reported that among the members present were Messrs. J. Gerrard, M.B.O.U. (President), W. D. Roebuck, F.L.S., J. Greenwood, J. Farrah, and R. Fortune, F.Z.S. (Hon. Secretary).

No systematic route was followed by this section, the members dispersing over a wide area—a method which is certainly deserving of encouragement, as the district visited is by this means more thoroughly worked. During the day Mr. Chapman, of Carperby, accompanied some of the members and gave them the benefit of his unique experience. The pleasure of inspecting his local collection of stuffed birds was one of the features of the day. Among his birds were noticed a Raven, Common Buzzard, Golden-eye, etc.

Mr. Chapman has had many local rarities through his hands at various times, as for instance, specimens of the Little Auk, Storm Petrel, Bittern, Peregrine, etc. During the day he pointed out a place near the falls, occupied by a Dipper's nest, which to his knowledge had been thus occupied every year, without a single intermission, for fifty years. A specially noticeable feature observed during the excursion was the great number of Starlings to be seen on all sides, intent only upon one thing, viz., procuring food for their numerous offspring. Every hole, nook, or cranny seemed to be tenanted by a squirming family of these birds. The large number inhabiting the district must certainly be appreciated by the farmers, as the benefit derived by them from the birds is incalculable. It is interesting to note that the Swift and Mole were observed at the height of 1,100 feet on Pennel, and that a pair of Buzzards nested on the moors last season; the young ones, we regret to say, were taken. The following is a complete list of the vertebrates. An asterisk (*) indicates that the eggs of this species were found, and a dagger (†) that young birds were seen:—

Mammals, 10.		
Mole.	Great Tit.	Tawny Owl.
Common Shrew.	†Coal Tit.	Sparrow Hawk.
Stoat.	Blue Tit.	Ring Dove.
Long-tailed Field Mouse.	*Wren.	Pheasant.
House Mouse.	Pied Wagtail.	Partridge.
Brown Rat.	*†Grey Wagtail.	†Red Grouse.
Water Vole.	Yellow Wagtail.	Land Rail.
Red Field Vole.	*Meadow Pipit.	Coot.
Hare.	*Tree Pipit.	*Waterhen.
Rabbit.	*Spotted Flycatcher.	Golden Plover.
	*Swallow.	Lapwing.
	*Martin.	Common Snipe.
	*Sand Martin.	*Common Sandpiper.
Birds, 61.	Greenfinch.	Redshank.
*†Missel Thrush.	Sparrow.	Curlew.
*†Song Thrush.	*Chaffinch.	*Black-headed Gull.
*†Blackbird.	*Lesser Redpole.	
Ring Ouzel.	Yellow Bunting.	Reptile, 1.
Dipper.	Common Bunting.	Common Lizard.
Wheatear.	Skylark.	
Whinchat.	*†Starling.	Amphibians, 3.
*Redstart.	Maggie.	Smooth Newt.
*Robin.	Jackdaw.	Common Toad.
Whitethroat.	Crow.	Frog.
Garden Warbler.	†Rook.	
Chiffchaff.	Swift.	Fishes, 3.
*Willow Wren.	Kingfisher.	Minnow.
*Wood Wren.	Cuckoo.	Trout.
Sedge Warbler.	†Barn Owl.	Grayling.
Hedge Sparrow.		

In the absence of the officers of the Conchological Section, the report on the day's proceedings was given by Mr. T. A. Lofthouse, of Middlesbrough, by whom and Messrs. W. Denison Roebuck, F.L.S., and Edward Chapman, assisted by members of the other sections, who brought shells for identification, most of the work had been done. The section was not, however, by any means sufficiently represented to admit of the thorough examination of a district of such a varied character as Aysgarth presents, and the dryness of the weather further militated against conchological work. The total number of mollusca obtained was 31, comprising six slugs, three freshwater and 22 land shells. Of these no less than 10 were additional records to the published lists for the district. One of the additions was *Planorbis albus*, found in the stagnant pools or old river-channels in the Strands pasture, near Carperby. Other four were slugs, viz., *Arion subfuscus* and *Limax marginatus* (= *arborum*) from Strands pasture, and *A. minimus* and *A. circumscriptus* from Carperby. The remaining five were land shells, viz., *Hyalinia pura* (with var. *margaritacea*), *H. fulva*, *Cochlicopa lubrica*, and *Carychium minimum*, all found in the vicinity of Aysgarth Falls, and *Helix nemoralis* found on the hills above Hawbank Woods. In addition to these *Helix cricetorum* was found in several fresh localities near Carperby. The other species observed were *Arion ater*, *Helix hortensis*, and *Balea perversa* at Carperby, *Vitrina pellucida* and *Clausilia rugosa* at Aysgarth Falls, *Helix lapicida* common near Redmire, *Hyalinia celloria* and *Pupa cylindracea* at Aysgarth, *Helix rupestris* common on limestone walls throughout the district, *H. arbustorum* and var. *flavescens*, *H. rufescens* and *H. hispida* about Carperby and Aysgarth, *H. sericea* common on nettles near Carperby and also at the Falls, *Agriolimax agrestis*, *Hyalinia alliaria*, *H. nitidula*, *Helix rotundata*, and *Succinea putris* throughout, and *Limnæa peregra* and *Ancylus fluviatilis* in the river.

The Entomological Sectional report was given by the President, Mr. James H. Rowntree, who writes that the following members of the section were also present:—Mr. Walter F. Baker (Secretary), Mr. M. L. Thompson, Mr. W. Hewett, and Mr. E. G. Potter.

The luxuriantly wooded district and the remarkably diversified character of the dale gave promise of great possibilities, which were hardly realised during the necessarily limited time available for investigation. Mr. W. Hewett and Mr. E. G. Potter, both of York, who had been staying some days in the district, sugared about sixty trees near Redmire on the 20th, but owing to the rain which fell unceasingly, both whilst sugaring and when visiting them after dark, the results were nil. Despite these unfavourable circumstances,

however, by their combined efforts the lepidopterists are able to record the following:—

Imagines.

Pieris brassicæ.	Rumia cratægata.	Emmelesia albulata.
Pieris rapæ.	Selenia lunaria.	Coremia munitata.
Pieris napi.	Acronycta psi.	Coremia ferrugata.
Anthocaris cardamines.	Odontopera bidentata.	*Coremia propugnata.
Chortobius pamphilus.	Iodis lactearia.	Melanippe subtristata.
Lycoena agestis.	Strenia clathrata.	Melanippe montanata.
Lycoena alexis.	Asthena candidata.	Anticlea derivata.
Procris globulariæ.	Cabera pusaria.	Camptogramma bilineata.
Procris statices.	Fidonia atomaria.	

(* *Coremia propugnata* was fairly common, both at Redmire and Carperby.)

Larvæ.

Vanessa urticæ.	Cleora lichenaria.	Cheimatobia brumata.
Vanessa atalanta.	Abraxas grossulariata.	

For the Coleoptera, Mr. Walter F. Baker reports that in the morning the vegetation was so very wet that it rendered 'sweeping,' which should have been the coleopterists' best aid, of but little use; but by noon the heat of the sun began to improve the state of things, and captures became more numerous, the large growth of nettles on the road leading up to the hotel receiving a fair share of attention and producing a good quantity of phytophagous beetles, including the various species of *Phyllobius*, *Otiorhynchus*, and *Apion* in the greatest abundance, whilst *Ceuthorrhynchus assimilis* and *C. contractus* (two species which, from their peculiar little habits, have well earned the name of 'Happy Jack,' by which they are commonly known in some parts of the county) were, as usual, common. Returning through the village and going along by the side of the river, we came across the traces of some herbivorous animals, and soon several species of *Aphodius* and *Cercyon* were added to the list, and a fine specimen of *Geotrupes vernalis*, one of the 'shard-borne beetles.' The very peculiar-looking larva of *Sphæridium scarabæoides* was also obtained here. Passing up the slope in front of Mr. Thomas Bradley's house, the steep bank-sides, well-wooded and covered with long vegetation as they were, looked a likely place for the sweeping-net, and a very satisfactory quarter of an hour was spent there, the captures including *Corymbites pectinicornis*, *C. cupreus*, *Athoïus hemorrhoidalis*, *Phædon cochleariæ*, and *Phyllobius oblongus*.

Passing further on, the loose stones by the river side next engaged attention, and here *Leistus fulvibarbis*, *Calathus melanocephalus*, *Nebria brevicollis*, and *Amara familiaris* entered the collecting-bottle, whilst the obtrusive little *Tachyporus chrysomelinus* was everywhere abundant. Then for some distance there was

nothing special to attract the coleopterist, though a little belt of trees on the river-bank well repaid the trouble of beating and sweeping; but a little further on, a large willow tree which had fallen into the river, though still tethered to the bank by its roots, produced *Melandrya canaliculata*, whilst beneath the loose bark, *Clivina fossor*, strange to say, was abundant, probably driven to this moist situation by the excessive drought of the previous few weeks.

Near here, the coleopterists were induced to stay some little time, owing to the alluring fascinations of a dead dog, but this did not provide the rich harvest they expected. Turning off into the Strands Pasture they came upon a series of pools, formed in an old river-bed, and these, surrounded as they were by reeds, and displaying a fair amount of pond vegetation (including *Potamogeton natans*, always a promising sign for the coleopterist) looked like producing some 'good things,' but here they were signally disappointed. *Elaphrus cupreus*, shining like burnished copper, darted about over the green weed at the edge of the pool, and was a very pretty sight, and numbers of them could have been obtained; but with regard to aquatic coleoptera, for some time not a trace could be found, though the larvæ of one of the caddis-worms (*Limnophilus rhombicus*) was very abundant, and the leaves of the *Potamogeton* were scored by the larvæ of one of the leaf-miners, but after about half an hour's diligent search a single specimen of *Helophorus aquaticus* was obtained, and shortly afterwards the larva of *Dytiscus* and a pupa of one of the large dragon-flies.

From here the members made their way back to the hotel at Aysgarth, having spent a pleasant if not remarkably successful day. The total number of species obtained on that day by Mr. M. Lawson Thompson and the writer was seventy-two, a list of which is given below:—

<i>Notiophilus biguttatus.</i>	<i>Sphæridium scarabæoides.</i>
<i>Elaphrus cupreus.</i>	<i>Cercyon melanocephalus.</i>
<i>Leistus fulvibarbis.</i>	<i>Cercyon uni-punctatus.</i>
<i>Nebria brevicollis.</i>	<i>Cercyon hemorrhoidalis.</i>
<i>Nebria gyllenhalii.</i>	<i>Aleochara lanuginosa.</i>
<i>Clivina fossor.</i>	<i>Tachinus marginellus.</i>
<i>Pterostichus madidus.</i>	<i>Ocypus brunnipes.</i>
<i>Pterostichus vulgaris.</i>	<i>Tachyporus solutus.</i>
<i>Pterostichus niger.</i>	<i>Tachyporus chrysomelinus.</i>
<i>Bembidium littorale.</i>	<i>Tachyporus hypnorum.</i>
<i>Bembidium tibiale.</i>	<i>Philonthus decorus.</i>
<i>Anchomenus albipes.</i>	<i>Philonthus varius.</i>
<i>Calathus melanocephalus.</i>	<i>Stenus speculator.</i>
<i>Patrobus excavatus.</i>	<i>Stenus similis.</i>
<i>Helophorus aquaticus.</i>	<i>Oxytelus tetracaratus.</i>

<i>Oxytelus laqueatus.</i>	<i>Phædon tumidulus.</i>
<i>Aphodius fossor.</i>	<i>Phytodecta olivacea.</i>
<i>Aphodius depressus.</i>	<i>Phyllodecta vitellinæ.</i>
<i>Aphodius contaminatus.</i>	<i>Apion violaceum.</i>
<i>Aphodius fimetarius.</i>	<i>Apion trifolii.</i>
<i>Aphodius ater.</i>	<i>Apion apricans.</i>
<i>Geotrupes stercorarius.</i>	<i>Otiorhynchus picipes.</i>
<i>Geotrupes vernalis.</i>	<i>Tropiphorus tomentosus.</i>
<i>Athoüs hemorrhoidalis.</i>	<i>Polydrusus micans.</i>
<i>Athoüs vittatus.</i>	<i>Polydrusus pterisgomalis.</i>
<i>Dolopius marginatus.</i>	<i>Phyllobius oblongus.</i>
<i>Melandrya canaliculata.</i>	<i>Phyllobius urticæ.</i>
<i>Corymbites quercus.</i>	<i>Phyllobius pyri.</i>
<i>Corymbites pectinicornis.</i>	<i>Phyllobius argentatus.</i>
<i>Corymbites cupreus.</i>	<i>Phyllobius viridiceris.</i>
<i>Cyphon coarctatus.</i>	<i>Sitones lineatus.</i>
<i>Telephorus bicolor.</i>	<i>Cœliodes quadrimaculatus.</i>
<i>Telephorus nigricans v. discoideus.</i>	<i>Ceuthorrhynchus assimilis.</i>
<i>Telephorus hemorrhoidalis.</i>	<i>Ceuthorrhynchus contractus.</i>
<i>Rhagonycha limbata.</i>	<i>Liosoma ovatum.</i>
<i>Phædon cochleariæ.</i>	<i>Rhinonchus subfasciatus.</i>

The Botanical Section was very strongly represented, those present including Mr. P. F. Lee (President), Mr. Albert H. Pawson (Secretary); Mr. W. Foggitt, of Thirsk; Mr. J. B. Foggitt, of Southport; Mr. R. Barnes, of Saltburn; and Mr. J. J. Marshall, of Market Weighton. The report was given by Mr. Albert H. Pawson, who also supplies the following account:—

The fine development of the Yoredale rocks, which are so interesting to the geologists in this part of the dale, is observed with great pleasure by the botanist also, for he knows that each zone of the series will yield him a new list of plants. On the grit which caps the summits are the heaths and the moor berries—bilberry, crowberry, cowberry, cloudberry, and cranberry; the cotton grasses, and many rushes and sedges, all the plants which seek a high exposure, peaty soil, and stagnant moisture. The limestone scar lower down, and the short, sweet turf of its talus will have none of these burly citizens, but keeps choice company in its delicate spleenworts and saxifrages, drabas, geraniums, and rock-roses. The beds of shale which overlie it redeem it from the great dryness of the mountain limestone of Craven, and provide trickling ledges for the butterwort, damp patches, such as the bird's eye primrose loves, and moist nooks out of which the columbine may rear her lovely head; and again the rich mixture formed by the decomposition of these various rocks, peat, sandstone, limestone, and shale, gives the woods and meadows and pastures of the lowest slopes of the dale a deep soil of incomparable fertility. In this happy valley the long-continued drought

has had no power to harm, and one is inclined to believe that this is greatly owing to the continual recurrence of these impervious beds which crop out at successive levels down the sides of the slopes, and provide a natural system of surface irrigation. Everywhere the sweetest spring verdure prevailed, and the flowers sparkled in the lush grass—summer flowers many of them were, owing to the great forwardness of the season. On the floor of the valley are several swamps and marshy tracts which were hailed with great delight by the party, and they were not disappointed, for they afforded many good plants, and most of this varied ground was worked by one or other of them, for several had been on the spot since Saturday, and others had walked over from Wharfedale on the Sunday, finding *Rubus chamæmorus* flowering as freely as the wood anemone about the water-parting, and accompanied by *Saxifraga granulata* in great abundance, from the ridge almost as far as Aysgarth, where it seems to be less frequent. Jack Wood was searched on Sunday, and also lower Waldendale. On Monday two or more parties worked the river-banks on both sides from the lower Force almost to the stepping-stones, under the skilled guidance of Miss Bradley, of Carperby, who led them to the home of several rare plants, including *Allium vineale* and *A. scorodoprasum*. Here *Actæa spicata* was found in tolerable plenty; also *Paris quadrifolia* of unusual size, in a bog of limestone mud, kept wet by its floor of shale; also *Primula farinosa*, *Pinguicula vulgaris*, *Orchis ustulata*, *Stellaria nemorum* of a very luxuriant form, and *Polygonum viviparum*. The side valley of Ellerbeck, and its swamp, were also visited, and the refuse-heaps of the old lead-mines at this spot. Here, as always, like groundsel in a garden, were found on this débris of the mineral vein, *Arenaria verna*, with its crony, *Thlaspi occitanum*, and, what is not so usual, beds of thrift, covering a rood of ground, in perfect bloom—a marvel of beauty, with large flowers of every shade from palest pink to deepest rose. Others of us accompanied the geologists to the summit of Penhill, gathering the tiny *Hutchinsia*, not yet out of flower, and observing the Parsley, Hard and Holly Ferns. The more uncommon of the plants noted on this delightful excursion were, in addition to some already mentioned:—*Aquilegia vulgaris*, *Trollius europæus*, *Draba incana*, *Saxifraga hypnoides*, *Menyanthes trifoliata*, *Hippocrepis comosa*, *Rubus saxatilis*, *Rosa spinosissima*, *Rosa mollissima*, *Geum intermedium*, *Lithospermum officinale*, *Euonymus europæus*, *Lathræa squamaria*, *Asplenium trichomanes*, *A. ruta-muraria*, *A. viride*, *Allosorus crispus*, *Polystichum aculeatum*, *Selaginella selaginoides*, *Sesleria cærulea*, *Melica nutans*, *M. uniflora*, *Bromus erectus*, *Eriophorum vaginatum*, *E. latifolium*, *Carex dioica*, *C. muri-*

cata, *C. præcox*, *C. panicea*, *C. paludosa*, *C. ampullacea*, *C. acuta*, *C. glauca*, *C. flava*, *C. sylvatica*.

Mr. John Farrah notes that the following plants were collected that do not appear in Mr. John Percival's list :—*Ranunculus hederaceus*, *Doronicum pardalianches*, *Humulus lupulus*, *Salix helix*, and *Bromus erectus*. *Geranium phæum* was reported as a well-established garden-escape at Carperby, by Miss Bradley.

For the Geological Section, in the absence of all its officers, Mr. J. G. Goodchild, F.G.S., gave the report, and the following account is supplied by him :—

The principal object of the Section on the occasion of this visit to Aysgarth, was to compare the development of the Lower Carboniferous Rocks of Wensleydale with their equivalent strata in the dales to the north. Without entering into details, for which reference should be made to the maps and memoirs published by the Geological Survey, the nature of the differences between the types of rock prevailing in each of these areas may be gathered from the following outline of the geology of the district.

Wensleydale proper consists mainly of Lower Carboniferous rocks, which lie almost horizontally over the greater part of the area. What inclination the strata may have over any part of the district is generally very small in amount (neglecting the areas around Carperby Scars); and may be said to be, in a general way, towards the North around Hawes, and towards the North-east in the district around Aysgarth. The fall of the bed of the Yore from Hawes to Aysgarth keeps almost exact pace with the dip of the rocks; so that nearly the same strata form the river-bed all the way from the village of Hardra to a mile or so below Redmire. To the east of that point the rocks dip faster than the fall of the river-bed, so that successively higher strata descend to the Yore as it is followed towards the lower end of the dale.

The dale may be said to be carried mainly out of a great pile—some fifteen hundred feet in thickness—of alternations of limestones, sandstones, and shales, together with chert beds and coal seams. All these are of marine origin, and form the Yoredale Rocks of Professor Phillips. This member of the Carboniferous Series can be traced without any important break, from Craven, through the north of England, into the basins of the Clyde and the Forth.

Below the Yoredale Rocks, whose lowest limestone is that of Hardra Fors, comes the Mountain Limestone, which is so well displayed around Ingleborough. In Wensleydale its uppermost beds alone occur, and these are seen only at the bottom of the valleys. Here they consist of thick masses of limestone interstratified with

some thin bands of shale, and with, at least, one band of sandstone. This latter is seen north of Hawes, at West Burton below the Fors, and again at Redmire Fors. It is the lowest stratum exposed anywhere in the dale. The shaly bands referred to as occurring in the overlying limestone give rise, by their unequal rate of weathering, compared with that of the limestone, to some of the more interesting waterfalls of the dale—Gale Fors, all three of the waterfalls at Aysgarth,* Abbey Fors at Askrigg, and West Burton Fors.

Above the Yoredale Rocks at one time occurred the whole of the Millstone Grit and the Coal Measures, amounting in the aggregate to many thousands of feet. At the present day nearly all this vast pile has been carried away by denudation (acting at various periods in the past); so that now only fragments of the lowest members of the Millstone Grit survive, and occur as outliers capping the highest fells of the district. A fine display of these Upper Carboniferous rocks is exposed on the summit of Pennel (or 'Pen Hill').

The chief lithological changes traceable amongst the Yoredale Rocks were studied in some detail on the ground. Stated in general terms they may be said to be closely connected with the condition under which the rocks themselves were formed. All through the Yoredale period (most especially during the formation of the limestones and cherts, less so through that of the coals and shales, and least through that of the sandstones), deep-water conditions prevailed over the area where Wensleydale now stands, while to the north-west of that part rivers, flowing south-eastward, were advancing their deltas towards the open sea. Intermittent subsidences during the growth of the deltas periodically carried their newly-formed slopes of mud and sand north-westward as the sea-bottom sank, and in that way periodically superinduced deep-water conditions over areas that would otherwise have shallowed through the seaward advance of the deltas.

Thus towards the north-west of any given point in the dale delta materials, i.e., sandstones, shales, and coals, tend to come on in greater force; while in the opposite direction, or towards the south-east, where deep-sea conditions predominated, such terrigenous deposits tend to thin away, while the organico-chemical deposits proper to clear water, that is to say, the calcareous and the siliceous strata, tend concurrently to maintain their thickness or even to increase. As a necessary consequence the sandstones lessen in importance as they are followed towards the south-east, passing first

* It should be noted that the local name of the chief fall is Eska Fors. 'Aysgarth' is probably an 'improved' form of this older name.—J. G. G.

into shales, and these, by slow degrees, into shales more and more calcareous until, eventually, they pass into pure limestones.

This will serve to explain the predominance of deep-sea limestones over deposits of terrigenous origin as the Yoredale Rocks are followed from the north-west south-eastward. It would also lead us to expect that, as these rocks tend south-eastward they would gradually pass into one undivided mass of limestone. Such appears to be the case, and, in this state, they have often been mistaken for the Mountain Limestone proper.

In the course of the excursion special attention was given to the demonstration of the foregoing principles by reference to facts visible in the field. Amongst other geological phenomena noticed was the origin of secondary silica, of which several excellent examples were met with. A demonstration upon this subject was ably given by Professor Percy F. Kendall. Another subject discussed in the presence of the facts was the evidence for the former existence of a rock-basin extending up the Yore from the upper falls at Aysgarth. It was pointed out that the river has only within recent times, geologically speaking, cut its way through this rock-barrier at Aysgarth and thus drained the above-lying lake. The subject of the origin of the scars and terraces of limestone was also discussed in the field at some length, and it was shown that their present conformation can only be explained on the view that they are due to glacial erosion. Lastly, the origin of the glacial drifts of Wensleydale formed the subject of an interesting discussion. It was pointed out that all the drifts in this part of Wensleydale are of *local* origin; that none of them are marine; and that the till, and the sand-and-gravel deposits, as well as the moraine-like deposits on the water-shed between the Yore and the Swale, are all of them mererly *different forms of sediment* left behind by the melting of the stony and muddy ice of the great ice-sheet.

A hearty vote of thanks to the Chairman then concluded the meeting.—W.F.B.

NOTES AND NEWS.

On June 8th, a Cuckoo flew into the boiler works of Messrs. Hawksley, Wild & Co., of Sheffield, where its strange surroundings and the unusual din so far upset its customary instinct of self-preservation that it would doubtless soon have paid, with its life, for its acquaintance with the industries of Sheffield, had it not been secured by one of the workmen. Instead of putting it to flight again the workman was so pleased with his capture that he took it home. The result was that the ubiquitous and wise police of the new city heard of it, and the Society for the Prevention of Cruelty to Animals summoned him before the magistrates for having in his possession a wild bird recently caught. It would be hard to say which displayed the least sense—the Cuckoo for getting into its dangerous position or the Society for the Prevention of Cruelty to Animals for prosecuting the man who rescued it.

YORKSHIRE NATURALISTS' UNION.

ANNUAL MEETING AT HUDDERSFIELD.

THE 31st Annual Meeting of the Yorkshire Naturalists' Union, held at Huddersfield, on the 15th of November, was a most successful and interesting gathering, no pains having been spared by the Huddersfield Naturalists' Society and its members in their endeavours to promote the success of the meeting and the comfort and enjoyment of their fellow-members from other towns. To this end they organised an extensive Exhibition of Natural History and Scientific Objects, in the Town Hall, which was open to members and visitors from 2 o'clock in the afternoon. The occasion being that of the rooth meeting of the Union since its re-organisation under the name it now bears, special attention was given to the illustration of Yorkshire natural history.

In Geology and Palæontology, Messrs. Joseph Field and C. H. Bould had brought together a fine series of Collections of Fossils and Minerals typical of the Geology of the county, including a number of palæolithic and neolithic flint implements. Mr. S. Learoyd, F.G.S., exhibited a beautiful collection of agates and other stones to illustrate 'Silica and Flint in Nature and Art;' and Mr. James Spencer, of Halifax, showed a large series of sections of Coal Plants and other geological slides, chiefly from the Carboniferous formations.

The Botanical exhibits included a collection of rare Yorkshire plants, which Mr. T. W. Woodhead had brought together with the assistance of Mr. P. F. Lee, of Dewsbury, and Mr. Charles Crossland, of Halifax. By the kindness of Mr. H. T. Mennell, of Croydon, he was able to include the original record-specimens of some of the plants which were discovered in Upper Teesdale by Mr. James Backhouse and Mr. G. S. Gibson. A feature of great interest in this department was a series of memorial plants which had been named in honour of Yorkshire botanists, which Mr. Woodhead had been at some pains to bring together—accompanied by brief biographical notes, and by the portraits of the various botanists in whose honour the plants had been named.

There was a large and most interesting series of exhibits in Entomology. Mr. Geo. T. Porritt, F.L.S., showed the matchless series of *Arctia mendica* from Grimescar near Huddersfield, which were described and figured in the Entomological Society's Transactions for 1889; also some fine varieties of *Arctia lubricipeda* from

York, and the very rare olive-banded form of *Bombyx quercus* from Crosland Moor, Huddersfield; fine melanic forms of *Boarmia repandata* from Netherton Wood, Huddersfield, as well as fine Yorkshire series of *Ypsipetes elutata*, *Cidaria russata*, *Hybernia progemma*, etc., and an almost complete collection of the British 'Plume' Moths (*Pterophori*). Mr. George Jackson, of York, showed some extraordinary varieties of *Chelonia caja*, *Arctia lubricipeda*, and *Abraxas grossulariata*. Mr. S. L. Mosley, F.E.S., had numerous objects on view, including a selection of drawings of varieties of the species just referred to, a museum collection of British Butterflies, arranged on an entirely new plan and one calculated to be of the greatest scientific service to students, cases showing life-histories of insects in all orders, and his collection of British Galls and Gall Insects, the Yorkshire examples being specially indicated. He also exhibited a complete collection of British Injurious Insects, prepared for the Museum of Economic Entomology at Melbourne; and numerous cases prepared for educational purposes.

In Conchology, Mr. Joseph Whitwham's remarkably extensive collection of British land and freshwater shells, in which the Yorkshire examples were specially marked, made a brave show, his varied and extensive series of *Anodontæ* and *Uniones* being particularly fine.

In Vertebrate Zoology, the united efforts of Messrs. J. W. Freer, S. L. Mosley, F.E.S., J. Wilkinson, W. Middlemost, jun., S. Calvert, W. H. Smith, Walter Dyson, J. H. Wood, and Ridsdale resulted in bringing together a remarkably interesting series of cases of British birds, their nests and eggs, special care being taken to represent them as far as possible by Yorkshire examples.

A large number of microscopes, objects, and accessory apparatus were displayed under the charge of Messrs. W. F. Piggott, H. G. Brierley, J. Clayton, A. Sheard, W. Lefevre, and A. W. Sykes; while Messrs. W. H. Charlesworth, W. F. Piggott, H. G. Brierley, and others contributed stereoscopes and a number of interesting slides relating to the geology of Yorkshire, Old and New Huddersfield, and other subjects.

Demonstrations with the oxy-hydrogen microscope were given by Mr. W. Tunstall.

Mr. A. Clarke, the energetic Secretary of the Huddersfield Naturalists' Society, was in charge of a powerful oxy-hydrogen lime-light lantern, by which he threw upon a screen a large number of lantern slides, including a number of marine animals brought by Dr. H. C. Sorby, F.R.S., as well as a series of portraits of all the Presidents of the Yorkshire Naturalists' Union, and other distinguished Yorkshire naturalists referred to in the Presidential address.

The exhibition remained open throughout the afternoon and evening, and was a source of interest and gratification to large numbers of members and visitors.

The business meetings began at 3 p.m., when the Sections met and elected their officers for 1893.

At 3.30 the General Committee met for the despatch of business. There was a large attendance of members and delegates, and the chair was occupied by Dr. H. C. Sorby, F.R.S., an ex-President.

The annual report was then read by Mr. Edgar R. Waite, F.L.S., one of the Honorary Secretaries. At the outset it referred to the year having been one of the most successful the Union has ever had, but pointed out that ampler funds and a considerably enlarged membership were needed to enable the Union to expedite the publication of MS. in hand. The meetings were then referred to in detail, after which it was mentioned that the number of Societies in the Union remained the same as in the previous year, that the number of members was also unchanged, remaining at 462, and that the total number of members and associates was 2,518, an increase of 30. The financial position of the Union and the various publications it has issued during the year were then treated of. Reference was next made to the Library, the Sections, the Committees of Research, and the British Association. The report concluded with a suitable reference to the services which Mr. Charles P. Hobkirk, F.L.S., the retiring President, had rendered the Union, of which he was one of the oldest members, and mentioned that he was to be succeeded in that office by so distinguished an ornithologist and traveller as Mr. Henry Seebohm, a native of Sheffield. The reports having been discussed and unanimously adopted, the excursion programme for 1893 was agreed upon, as follows:—

May 22nd, Whit Monday—Aysgarth.

June 15th, Thursday—Askern.

July 10th, Monday—Kirkby Moorside.

Aug. 7th, Bank Holiday Monday—Sawley Abbey.

Sep. 6th and 7th, Wednesday and Thursday—Howden (Fungus Foray and Excursion).

It was decided to hold the next Annual Meeting at Skipton, on Tuesday, November 14th, 1893, in response to a cordial invitation from the Craven Naturalists' Association, presented by Messrs. R. H. Tiddeman, M.A., F.G.S., and J. J. Wilkinson.

The election of officers was then proceeded with. The retiring honorary secretaries, honorary librarian, and executive were all re-elected. The Committees of Research were also re-elected, with slight alterations, Messrs. J. W. Stather and F. F. Walton being

added to the Boulder Committee; Mr. Tom Petch, B.A., to the Marine Zoology Committee; and Mr. J. F. Robinson to the Disappearance of Plants Committee. The Hon. Local Treasurers were re-elected with various additions and substitutions. Mr. Edwin Hawkesworth was elected auditor; and Messrs. H. H. Corbett, R. Paver Crow, J.P., John Gardner, F.E.S., George Jackson, Henry Johnson, R. E. Leach, M.A., F.G.S., Rev. H. E. Maddock, M.A., F.G.S., Thomas Mitchelson, W. Y. Veitch, M.D., and Charles Waterfall were added to the list of permanent members of the General Committee.

The following were elected new members of the Union:—Messrs. John Hill, Morley; Edward Peake, M.A., Settle; Tom Petch, B.A., Hedon; E. G. Potter, York; Albert Rothery, Liversedge.

Discussion then took place as to the inadequacy of funds for the publication of the matter which the Union has in hand for publication, and a resolution agreed to on the motion of Mr. J. W. Addyman, B.A. (on behalf of Mr. W. Denison Roebuck, F.L.S.), seconded by Mr. S. Chadwick, F.G.S., in favour of a very large addition to the membership being secured, and requesting the Executive to devise measures to that end.

The question of the desirability of the establishment by Government of Fish Hatcheries was introduced by Mr. E. Howarth, F.R.A.S., on whose motion, seconded by Mr. A. T. Watson, it was unanimously resolved that 'in the opinion of this meeting, the establishment by Government of Marine Laboratories and Fish Hatcheries would be advantageous to the Fisheries of the United Kingdom.

The Sections then by their spokesmen announced the names of the officers they had elected, after which the proceedings terminated.

A substantial tea was partaken of in the Mayor's Reception Rooms, Mr. A. W. Sykes being the caterer.

In the evening the members assembled in the large hall of the Town Hall for the delivery of the Annual Presidential Address.

The chair was occupied by Mr. George T. Porritt, F.L.S., in the absence of Mr. S. Learoyd, F.G.S., who had been announced to preside. The Presidential Address, written by Mr. Charles P. Hobkirk, F.L.S., whose unavoidable absence was a great disappointment to the members, was then read by Mr. Edgar R. Waite, F.L.S., one of the Secretaries. The address dealt with the history and methods of work of the Union, on the occasion of its completing a series of one hundred meetings since its re-organisation. At the conclusion a cordial vote of thanks to the President for his address and to Mr. Waite for reading it, was adopted on the motion of Rev. W. Fowler, M.A., seconded by Mr. Benjamin Holgate, F.G.S. A similar vote of thanks

to the Huddersfield Naturalists' Society for their most hospitable reception of the Union was proposed in a humorous speech by Rev. E. Maule Cole, M.A., F.G.S., seconded by Mr. John Gerrard, and having been enthusiastically received, acknowledged by Mr. T. W. Woodhead, the President of the Huddersfield Society. A vote of thanks to Mr. Porritt for presiding was adopted on the motion of Dr. H. C. Sorby, F.R.S., seconded by Mr. J. W. Robson, Chairman of the Huddersfield School Board, and concluded a series of meetings which for their success and interest have been unsurpassed in the Union's history.—W.D.R.

NOTES AND NEWS.

We take the opportunity of renewing our friendly protest against a common practice of some local societies, that of altering the pagination of 'author's copies,' and frequently omitting the actual date of publication. This often renders the separate copies useless for reference or for bibliographical purposes.

A notable feature of the Liverpool Naturalists' Field Club is the giving of prizes for excellency in the various departments. It appears, upon looking through the proceedings for 1892, that at each excursion a description of some chosen plant is given to the members, for which plant they are expected to search; having found it, it must be named and handed to the botanical referee. The most successful competitors during the season are awarded prizes of various value in books. These 'Botanical Enigmas' are apparently quite a feature of the society. This is doubtless a good way of teaching botany, but the principle is not one which will, in our opinion, be imitated by many naturalists' clubs. For the first time in their history our Liverpool friends publish an entomological record of the district. We welcome this, as we also should any further development; for the society at present seems to be little more than botanical.

We are indebted to Mr. Herbert Spencer for a reprint of his essay upon 'The Inadequacy of Natural Selection,' which appeared in the 'Contemporary Review' for February and March last; as this essay has, as might be expected, roused some opposition, a few words with regard to it will be of interest. At the outset Mr. Spencer chooses to bring forward some of Weber's experiments on the sense of touch, and asks the meaning of the varying powers of tactual discriminativeness in the human body, and what is the cause which has established these differences. Taking the view as implied by the title, our veteran biologist endeavours at great length to prove that natural selection is not and could not be the cause. If we were to assert a frank denial of this it would be necessary to go far into detail; but whilst we will not do so, we must take some objection to the using of the experiments in question as being unsatisfactory. Mr. Spencer admits that the superior perceptiveness of the fore-finger tip may be accounted for by the survival of the fittest, and after an unprejudiced perusal of his article we fail to see why this admission may not be extended to other surfaces. We have much sympathy with an article by Mr. W. P. Ball in the May number of 'Natural Science,' in which, under the heading of Natural Selection and Lamarckism, he challenges many of Mr. Spencer's suppositions. We have not space to enter into the details of this conflict, but can assure those of our readers who have not already acquainted themselves with Spencer's latest, that they have something to gain by so doing. Perhaps (for the sake of those who would be misled by the title) we should note that Mr. Spencer states that the essay, rather than being directed against the views of Darwin, is in fact quite the reverse. This may be so. Darwin has been very much misunderstood in time past, and we doubt not that many of his seeming dissenters are in reality not so far removed in opinion as they would appear to be.

THE PROTECTION OF WILD BIRDS' EGGS.

REV. E. P. KNUBLEY, M.A., M.B.O.U.,

Rector of Staveley; Chairman and Convener of the Yorkshire Naturalists' Union's Wild Birds' Eggs Committee.

In presenting the report of the Committee appointed to discuss the advisability or not of providing protection for the eggs of wild birds by legislative enactment, it may be well to state at the outset that at present certain birds are protected by a close time in the nesting season, during which it is illegal to kill them, but that this protection does not extend to their eggs. The eggs, in fact, of every kind of wild bird, whether common or uncommon, useful or otherwise, are liable to be destroyed through thoughtless carelessness, wanton mischief or sordid greed.

At present there is nothing to prevent whole areas from being systematically plundered of every egg of every bird—and it is done. Again, certain of our British birds nest in colonies in a few known localities; and as the law now stands there is nothing to hinder the taking of the eggs of these birds to such an extent as to prevent the hatching of a single young bird. It requires no prophet to foretell what will be the result of this system of pillage if it is allowed to proceed unchecked.

The question has been asked—Has the time come when legislative protection is required for wild birds' eggs? A committee of the British Association was appointed at its Cardiff meeting, with a view to inquiring into this subject; but it has not yet felt itself in a position to make any recommendations. The committee, which includes the names of Professor Newton and Canon Tristram, was re-appointed at the Edinburgh Meeting; and it is hoped that next year it may feel in a position to offer suggestions on this extremely difficult subject.

A committee of the Yorkshire Naturalists' Union with similar objects was appointed at the annual meeting last year. No meetings have been held, but the Chairman addressed a letter to each member of the committee, and from the replies received from these and other members of the Union, he obtained much valuable information, and many useful suggestions. Fortified with the matter thus placed at his disposal, he, as delegate of the Yorkshire Naturalists' Union, was able to bring this important subject before the Edinburgh meeting of the British Association at the conference of the delegates of the corresponding societies, and, after a most interesting discussion, the following resolution, proposed by Mr. Knubley, seconded by Mr. E. B. Poulton, and supported by Canon Tristram, was carried unanimously:—

The Conference of Delegates, having heard of the threatened extermination of certain birds, as British breeding species, through the destruction of their eggs, deprecates the encouragement given to dealers by collectors through their demands for British-taken eggs, and trusts that the corresponding societies will do all that lies in their power to interest and influence naturalists, landowners and others in the preservation of such birds and their eggs.

All will agree that if legislative protection for wild birds' eggs is asked for at all, it is not required for all species. Indeed, sweeping legislation would do more harm than good. There are certain groups, such for instance, as the Passeres, that are very well able to take care of themselves, and need no protection. Again, all will agree that it would be a mistake to pass laws which could not be enforced. Any general law against egg-collecting would be easily evaded, and every one knows the demoralising effect of an unenforced rule.

Setting aside, then, all idea of a general prohibition of egg-collecting as impracticable, if not mischievous, there are still cases in which the maintenance of the present freedom from restraint appears to be open to doubt; as we have already stated, there are certain species which will shortly become extinct as breeders in the British Isles if steps are not taken by legislation or otherwise to protect them. What can be done for these?

Here the difficulties begin. What form of protection is the best? and to what species should such protection be extended? If it is eventually found necessary to have recourse to legislation, the most practical plan would probably be for the Imperial Legislature to grant powers to the County Councils from time to time, and as the necessity arose, to place certain portions of a district, such as mountains, commons, waste places, lakes, and meres, or portions of cliffs or foreshores, under an Act for certain specified months in the year, say from April 1st to June 30th. Such a plan would be simple and might be effective.

But very much more than any legislative protection, we want the sympathy and co-operation of landowners and occupiers in order to get them to protect the birds breeding on their property or occupation. The whole matter of the preservation both of birds and their eggs ought to be better managed by those on whose property the various species nest than by any legislative restrictions. If landowners and occupiers, game-preservers and gamekeepers, would only use whatever brains and common sense Providence may have endowed them with, and learn to discriminate between friends and foes, we lovers of birds for their own sake should not have much to complain of. Farmers are beginning to know at last that all birds are not their enemies, and ideas of the same sort are working slowly into the brains of some few gamekeepers, and into those of a good

number of their masters, so that the aspect of affairs is becoming more hopeful. The question is too delicate and difficult a one to be lightly thrown into the arena of party politics, and it is earnestly to be hoped that means may be found for the protection and preservation, when necessary, of our wild birds and their eggs without having recourse to further legislation.

UNITED STATES HAWKS AND OWLS.

The Hawks and Owls of the United States in their Relation to Agriculture. A. K. FISHER, M.D., U.S. Department of Agriculture, Bulletin No. 3. 1893.

To publish a lengthy article on the misunderstood habits of rapacious birds would, if it were likely to come under the observation of farmers and gamekeepers, give us an immense amount of satisfaction; we hail therefore with pleasure the appearance of this excellent monograph, and cannot do more than hope that it will have a large distribution throughout the area of which it treats; if so, something at least will be done towards checking the wholesale slaughter of these beautiful birds.

The work which we now notice was compiled several years ago, but has been withheld from publication until provision could be made for suitable reproduction of the coloured plates, which, we may add, are a feature of the book, and without them its usefulness would have been much impaired.

We find there are so many as 73 species and sub-species of Hawks and Owls (many of which are solely American) recorded for the district. Some few, however, are identical with species in our own and adjoining countries. The Osprey (*Pandion haliaëtus*), which we learn has quite recently been seen in co. Cork, appears to resemble very closely the American Osprey, of which an illustration is given.

It is clearly stated that out of this large number, only six may be classed as being positively harmful to the farmer, and of these three are so extremely rare that they need not be considered; whilst one (the Fish Hawk) is only indirectly injurious; so that only two species need be taken into account as enemies to agriculture. Tables are given showing the result of critical examination by scientific experts of several hundreds of stomachs, and the author concludes that these birds, commonly looked upon by farmers as enemies, are in fact the reverse. Dr. Fisher says: 'Owls are the most beneficial of all birds, and Hawks, with one or two exceptions, are to some extent beneficial.' The work is a valuable addition to ornithological literature, and we consider it almost impossible to over-estimate the good it must do.—L. H.

YORKSHIRE GALLS: ADDITIONAL SPECIES AND NEW LOCALITIES.

S. L. MOSLEY, F.E.S.,

Beaumont Park Museum, Huddersfield; Author of 'British Birds, Nests, and Eggs,' etc.

SINCE my last list ('Naturalist,' 1892, p. 337), the long-expected fourth volume of Cameron's 'Phytophagous Hymenoptera' has appeared, and though certainly a very welcome volume, I must own to just a little disappointment. Still, it will be very useful as bringing up to date what the author has been able to gather on the subject.

From my own observations, and material forwarded to me by correspondents in various parts of Yorkshire, I am able to give a few more species, and some additional localities for some of those already recorded. As before, I take them under the plants in alphabetical order.

On *Acer campestre*. Maple.

Small scarlet pimples on upper-side of leaf. Caused by a mite (*Phytoptus myriadeum*). For a long time I have been on the look-out for this gall in Yorkshire, feeling sure it should occur. I have never found it, however, until June 15th, when I found it abundantly in a lane not far from Askern. Messrs. Parkin, Gerrard, and Greenwood were with me at the time. Some of the leaves were quite covered with galls.

On *Achillea ptarmica*. Sneezewort.

I have been able to verify the somewhat vague notice sent me by Mr. Inchbald, of the occurrence of the gall of *Cecidomyia ptarmicæ* in the Huddersfield district. I found a number of galled plants at Farnley Hey, and Mr. Parkin gave me a quantity found by him in Ryhill Pits near Wakefield, from which I have since (June 21-28) bred the flies. The flower-head is galled into a solid pinkish hairy knob, with a flattish top; almost unrecognisable as the flower-head of *Achillea ptarmica*.

On *Alnus glutinosa*. Alder.

Bladder-like swellings, standing up 1-4 lines from the upper surface of the leaf. These are caused by a mite; I believe *Cephaloneon pustulatum* Bremi. I found it in great abundance in Owston Wood during the Askern excursion; and I have since met with it freely in Anston Stones. Mr. J. W. Carter, of Bradford, had previously given me specimens, from Seven Arches, I think!

On Hieracium boreale.

Large swelling on flower-stalk, caused by a hymenopteron (*Aulax hieracii*). The Rev. John Hawell sent me this gall from Little Broughton, near Middlesbrough.

On Quercus robur. Oak.

Small pea gall on under-side of leaf, attached to side ribs, hard, with *two* cavities, caused by a hymenopteron (*Dryophanta disticha*). Cameron gives no localities for this gall, and states that it is 'rare,' but it is now in great abundance in Butternab Wood, near Huddersfield. I should state, however, that I have never met with it there before this season.

On Rosa canina. Dog Rose.

I believe the galls referred to in my last paper as being found at Shepley were not those of *Rhodites rosarum* as stated. According to Cameron's figure the spines in my specimens were not long enough for that species, and were, more probably, merely the spined form of *R. eglanteriæ*.

On Potentilla tormentilla. Tormentil.

Small pea-like galls on stems, singly or in clusters. Caused by a hymenopteron (*Xestophanes brevitarsis*). I have found what is probably this species at Lepton, near Huddersfield, but as I have not reared the flies I cannot be absolutely certain.

I will again take the liberty of reminding readers of the 'Naturalist' that I shall be pleased to receive any excrescences on plants, especially if they do not seem to agree with the descriptions given in the three papers I have written on 'Yorkshire Galls.' Botanists are always examining plants, and must frequently come across galls, and could add very much to our knowledge if they would kindly pick them up when found.

NOTES AND NEWS.

We have received the Report and Transactions of the Manchester Microscopical Society, and cannot refrain from making special mention of this successful institution. During the thirteen years it has been established valuable work has been done, and each succeeding year marks a step in the right direction. The value of the Transactions for 1892 cannot, we consider, be over-estimated. Two addresses have been given by the President (Professor Milnes Marshall), which speak much for his interest in the Society. Amongst other papers we take special interest in the résumé of the Biological Course, and as the issue contains a photo of the worthy President, a catalogue of books in the library, and several plates illustrative of the text, it cannot but be of exceeding value, especially to the 250 members of which the Society is composed.

SPECIMEN DAYS ON THE YORKSHIRE COAST.

REV. W. C. HEY, M.A., M.C.S.

Vice-President of the Yorkshire Philosophical Society, West Ayton, near Scarborough.

SCARBOROUGH, Oct. 29th, 1891. On the Castle Hill.—The wind is east; a little blue sky appears in rifts among woolly grey clouds, which are silvered in the neighbourhood of the sun. The clearness is extraordinary. Flamborough Head appears, not in misty outline, but as a long, sharp range of grey precipices. The Lighthouse and Speeton Mill stand up in clear definition. Filey Bay seems narrowed to a mere creek. Sunshine falling on fields far away reveals them in the most vivid yellow greens. The distant moors appear, not, as commonly, blue, but red-brown, and all the nabs are clear-cut against the sky. The slopes of the Castle Hill are green with young leaves of Alexanders (*Smyrniium olusatrum*). No British plant shows fresher verdure in winter. This fine weather has wooed many daisies into bloom.

An hour has passed and I have reached the topmost stile on the way to Ayton. From here I look into the water in Filey Bay, and have a glorious view of the whole headland in the hard clear air. Sunshine lies on the faded stubbles near Filey Cliffs; the healthy scent of burning weeds sifts by, and the drowsy hum of a thresher comes from the hollow below. Under the withered larches a woman is gathering blackberries.

SCARBOROUGH, July 9th, 1891.—I am sitting on the low stone wall near the Cliff Bridge. Grey clouds have overspread all the sky, and given their sombre colours to the sea and to the sands and the cliffs. Even the green slopes of the Castle Hill and the red roofs below are almost merged in one general tint. A strong north-east wind drives the breakers in many orders against the cliffs; and now and then sends a puff of dust along the road, and flaps the flags on the boat-masts in the harbour. Under the lighthouse are gathered many steam-trawlers; the smoke from their funnels blowing quickly away. The tide is beginning to swallow the thick-marked sands, smoothing out footprints and cart-ruts and hoof-dints. Oh, that the marks of sin and care could thus be smoothed out of human souls!

As I write, I am startled by a passing figure, going by absolutely noiselessly, because bare-footed. I am struck by the thought that the footfall is quite a modern sound. We often read of the Indian's stealthy tread. Thoreau compares it to the flow of a still river.

But every unbooted foot is necessarily stealthy, because soundless. How strangely *silent* the communities of primitive people must have been—no meaning there for the line in Tennyson's elegy for Wellington—

Let the feet of those he fought for
Echo round his bones for evermore.

FILEY, Sep. 8th, 1891.—The day rose with gloom and drizzle, but it has now established itself as warm and still, with a sky whose blue ground colour is figured and strewn thickly with white and grey clouds—

The sky is a gossamer web
Of sapphire and pearl and grey.

Here, by Filey caves, a faint breeze blows from the water, and the horizon of the blue sea is merged in vapour with the sky. An idle swell rises upon the rock-ledges, and the wave runs back in white waterfalls which have caused a little white foam to float on the surface and outline the contour of the cliffs. These cliffs rise in shelves, first black with *Fucus*, then green with *Enteromorpha*, afterwards, bare layers of grey and white rock. On these lie coarse gravels, and above steep slopes of boulder-clay crowned with verdant turf. In the echoing basin below me the rising tide is gradually making a louder and louder sound of rushing. The sun is growing brighter, and a fresher wind is carrying a brown-sailed yawl beyond the Naze. Behind me the sea is noisy about a piece of cliff, which the rummaging waves have perforated. A larger wave has just smitten the rock with a great boom, and the scattered spray fallen back with a loud splash.

Sep. 12th, 1891.—Waiting at Filey Station for the evening train to Scarborough. The sun, a glowing, red-gold orb, is sinking in a purple-copper haze. Some trees, still in full foliage, stand out black against the brightness beyond. The half-moon hangs above the Speeton eskers, which are growing dim in the evening light. The pastures are full of faded grains, and their pallor contrasts strongly with the dark hedges, and the brown and black horses. The rounded slopes are crowned with cornstooks. Muston Mill is dark against the sky. A cool south-easterly breeze blows refreshment in my face.

REDCAR, Feb. 20th, 1889.—A strong north-west wind is blowing, but here, under the wall at the east end of Redcar, it is warm and delightful; for a bright sun bathes me, body and spirit, and the wind gives but gentle puffs in my face now and then. I am sitting

upon one of those planks on feet, made to assist people to get into boats, and about me lie half-a-dozen big cobbles, bearing their numbers and the letters M.H. (Middlesborough Harbour)—there on my right, and on my left two worn-out boats, turned bottom upwards, waiting decay and death; like poor old folks, who, being no longer able to work, are pushed on one side to die.

Between the stern of the upturned boat and the curving prow of another, spread undulations of grass-grown sand; sun here, and shade there; beyond them the smooth beach, crossed by a pearly thread, the course of a streamlet to the sea, then a long white fringe of foam and breaking waves, and pale blue sea above them. In the distance rises Huntcliff, and the gigantic spectre of Rockcliff, with the mere wraith of Staithes Point beyond. The sky is a very light blue, with soft white stratus clouds, tinged with pale dove grey. A skylark is pouring out its flood of song as though it were singing against time, and many other birds are twittering. The sea is falling fast, and at my left its surface is streaked with two long ribs of snow-white foam, where East Scar and Salt Scar project. On my right I see Upleatham Hill, palely grey, with the white smoke-puff of a passing train in front.

FLAMBOROUGH HEAD, Sept. 16th, 1890.—I have walked along the cliffs from the North Sea Landing, over dewy sheep pastures, and descended to the shore at Selwicks. The sun is bright, but a soft haze broods upon the far-off sea, and hangs like a veil before the face of the great white cliffs. The wind blows from the south-east, and there is a noisy turbid sea. I have reached a dark gullet full of thick water, smacking its lips under the shelving rocks. But a dim light falls on the water from within, for this gullet is the entrance to a great roofless cave or creux—the ‘Pigeon Hole’—a gruesome pit to look into from above when the waves are seething and raging in its dark hollow—a veritable devil’s caldron.

FLAMBOROUGH, Sept. 19th, 1890.—I am resting on the top of the slope that rises between the Thornwick Bays—resting in the setting sun. I have come over the downy fields, where the sheep were busily feeding, their grey fleeces blown back in the evening wind, and past the sighing souging beds of reeds, and have sat down to listen to the quiet blue sea whispering his low tale to the white cliffs. But they distrust him, and abate not a whit of their ruggedness for all the smooth fondness of the caressing wavelets. Their shattered rocks and pierced sides tell what the sea hath done to them, and these two will never be friends again. Upon the

opposite cliff, two pink blooms of thrift have opened, like some sweet memory of earlier and happier days.

BURLINGTON, Sept. 21st, 1889.—I am sitting on a chalky hedge-bank on the road-side from Burlington to Speeton, in a hot sunshine, with a tall hedge between me and the singing north-west wind. I look on two old friends, the six-sailed windmill and the Priory Church, dark against the sun-gilt sea. All about me is life; many flies of many kinds, beetles running in the sunshine, *Anchomenus prasinus* in his green coat, faced with orange, and shining black *Pterostichi*, bright as polished jet. Euphrasia opens a hundred pale violet eyes to the sun, harebells depend their blue cups, and a thousand dried stalks of *Gentiana amarella* tell of former beauty, just a scattering of amethystine blooms remaining, the wrecks of a great flower-feast. A long-legged spider scuds over the path; an empty corn wagon goes by, carrying a crowd of singing urchins. Well may they sing in the glorious sunshine, which makes this old world new, and sheds heaven upon earth.

NOTES—ORNITHOLOGY.

Birds added to Sheffield Museum.—We have just added to the Sheffield Museum the following birds found in the area included in the cognisance of 'The Naturalist':—Two Red-throated Divers (*Colymbus septentrionalis*) shot at Flamborough, 1890; one Crested Grebe (*Podiceps cristatus*) shot at Flamborough, 1892; one Crested Grebe shot at Torksey, Lincolnshire, 1892; one Little Grebe or Dabchick (*Podiceps minor*) shot at Norton Hammer Dam, Derbyshire, 1892.—E. HOWARTH, Curator, Public Museum, Weston Park, Sheffield, July 11th, 1893.

Nesting of the Hawfinch in Notts.—The Hawfinch (*Coccothraustes vulgaris*) is fairly common in this district, and in the last spring I have been looking far and wide for its nest, but unsuccessfully; and now I find all this time there has been one within almost a stone's-cast of the room in which I am now writing. The young, four in number, got off the last week in June, a rather late date, and since this, along with the parents, have been particularly attentive to our pea rows. From closely watching them, however, I can testify that the injury they have done the crop is trifling as compared with that inflicted by the common Sparrow. The character of the Hawfinch may be summed up in three words—shy, sly, and silent.—JOHN CORDEAUX, Eaton Hall, Retford, 3rd July, 1893.

Fertility of the Meadow Pipit in the North.—Having lately found 17 nests of *Anthus pratensis* on the Norwegian fells, I give the number of eggs found in them, showing an average of 5.53 eggs per nest.

Three nests with seven eggs each.

Seven	„	six	„
Four	„	five	„
Two	„	four	„
One	„	three eggs.	

In every case the bird was flushed from the nest, which indeed led to their being found. In the last case the bird would doubtless have laid more than three eggs. All the eggs were found in June. In Norway the Meadow Pipit as a rule nests only on the fells, not on low grounds as in England, though on one occasion I found a nest near Stavanger less than 200 feet above the sea.—JOHN P. THOMASSON, Woodside, Bolton, July 3rd, 1893.

LAKE COUNTRY ROCKS: MICROSCOPICALLY DESCRIBED.

THOMAS TATE, F.G.S.,

Leeds: Hon. Sec. to the Yorkshire Boulder Committee.

THE identification of the crystalline constituents of Eruptive Rocks by their optical behaviour when in thin sections under the microscope, is extremely simple. Each mineral, in virtue of its structure and composition, possesses characteristic optical properties by which it may be recognised.

By transmitted light they appear either colourless, coloured or opaque. The coloured minerals may next be examined with the polariser only, when some will pass from light to dark tints as the prism is rotated (pleochroic), while others will remain unaffected (non-dichroic). If the analyser be now added, those minerals which depolarise will give more or less brilliant chromatic effects as the polariser is rotated (anisotropic), while others will show no colour changes, merely remaining dark between crossed Nicols (isotropic). The commonest colourless sections are those of quartz, felspars, leucite, nepheline, enstatite, olivine, apatite; and these are all anisotropic save leucite, which is dark between crossed prisms, and apatite, which usually continues bright. Muscovite, biotite, hornblende and ferruginous enstatite are dichroic and anisotropic, while augite and diallage are non-dichroic but anisotropic, and all are coloured by transmitted light. Magnetite and pyrites are both opaque, but, viewed by reflected light, the former is of a leaden and the latter of a brassy hue.

The most abundant alteration products are chlorites, serpentines, calcite and opaque iron ores. The two former are green, only the first is pleochroic; calcite is colourless, traversed by fine cleavage lines intersecting at an acute angle, and giving iridescent polarisation.

The following descriptions, the result of the examination of over one hundred and twenty specially prepared slides, were drawn up primarily for those members of the Yorkshire Boulder Committee who possessed slides of such Lake District Rocks as are most commonly dispersed in the Northern Drift. They have also, it is said, been of some service to the members of the writer's petrological class. In response to the wishes of both they are now willingly placed, in a more accessible form, at the service of other petrographical students.

[40]* Biotite granite: SHAP. *Quartz* in round or irregular grains, idiomorphic towards the felspars. *Plagioclase* and *orthoclase*

* The number of each slide given in brackets refers to the rock specimen in the collection of the Boulder Committee, from which it was cut, for which see 'Naturalist,' August 1892.

act as a matrix for the quartz, strings of feldspars lying between the quartz grains. *Mica*, dark brown in hexagonal basal plates: light brown tints where the cleavage traces are nearly at right angles to the short axis of the polariser. In sections making a smaller angle with the polariser the tint will be darker. Green mica (pleochroic) alternating with the above occasionally. *Apatite*: hexagonal prisms abundant, the clear, bright crystals in the biotite are cross-sections which rotated between crossed Nicols remain dark; also in stumpy and a few fine prisms with parallel extinction. *Zircon*, a few small prisms with obtuse pyramids. *Sphene*, cuneate brown-olive (pleochroic), also in granular patches. Granules of *magnetite* accompany the green mica.

[7] White porphyritic granite: SKIDDAW. *Feldspars* white, turbid (examine by reflected light). *Orthoclase*: note 'schiller' fibrillation. *Oligoclase* giving Carlsbad and albite twinning. *Mica* red-brown to pale honey yellow, with some green and even colourless from loss of iron, now gathered up, forming secondary magnetite grains. *Quartz* (with numerous moving bubbles), in clear tints, rainbow margins, allotriomorphic, filling the interstices between the above constituents. *Apatite* as small square or rod-like prisms: highly refractive but colourless; first evolved and therefore present in all the other components. *Epidote* after feldspar and biotite where these are in contact: colourless, with brilliant polar tints. Chlorite (green) after biotite here and there.

[29] Biotite granite: ESKDALE. *Quartz* in irregular grains enclosed by the feldspar which sometimes penetrates them: multitude of minute cavities arranged in linear symmetry: note 'strain-shadows,' between crossed Nicols. *Feldspars* kaolinised (giving 'aggregate polarisation'), and a chloritoid substance, feebly pleochroic along cracks. *Orthoclase*, Carlsbad, and *olegoclase* with albite twinning. *Biotite* dark brown to honey-yellow and green to colourless (pleochroic): basal sections hexagonal, isotropic: prisms across cleavage traces much bent. *Apatite* in six-sided cross-sections, clear, colourless and highly refractive (pitted). *Epidote* is a secondary constituent where biotite and feldspar lie in contact: it is colourless by ordinary light but polarises in brilliant tints. *Magnetite* in scattered grains.

[33] Aplite: a fine-grained vein intrusive in Eskdale granite at WABERTHWAITE. *Micropegmatitic*: the feldspars are chiefly *orthoclase* with *oligoclase* in part, and *microcline*. *Quartz* in clear granules (save for the very minute pores) precedes the feldspars by which it is surrounded. A little green *biotite*; and a few *garnets* (anisotropic).

[22a] Quartz-Felsite (grey): THRELKELD QUARRY. Porphyritic crystals of *quartz* and *felspar* in a microcrystalline intergrowth of the same minerals. The large quartz crystals have been fractured, and have had their edges fused, this zoning extinguishing uniformly with the body of the crystal. They contain enclosures in linear symmetry. *Mica* brown, strongly pleochroic: or in patches of chloritoid substance with feeble pleochroism. The felspathic components are kaolinised giving feeble aggregate polarisation.

[22b] Quartz-Felsite (red): LOW RIGG, ST. JOHN'S VALE. A microcrystalline ground-mass, consisting of rectangular grains of clear *quartz* with *felspars*, mostly of prismatic habit, moulded thereon. The porphyritic elements in this slide are all felspars, being chiefly *orthoclase* with a few *oligoclase* crystals often zoned. Microperthite structure shown here: many are fractured, the fragments lying in juxtaposition indicating movement during recurrent phase prior to final consolidation.

[20] Augite granophyre: CARROCK FELL. A *granophyric* ground-mass moulded upon microporphyritic crystals of felspar mostly plagioclase in square sections. The *orthoclase* crystals extinguish simultaneously with the surrounding micropegmatite. *Quartz* in small allotriomorphic grains. Brown *augite* at one time figured as an important constituent; it is now represented chiefly by iron-oxide blotches with here and there a patch or small crystal zoned by iron-oxide. *Epidote* in pale green patches feebly pleochroic, but double refraction stronger than the pyroxenes. Note the pseudosphærolitic structure giving black cross when rotated between crossed Nicols.

[8] Quartz Felsite: ARMBOTH DYKE. A granophyric structure—an intimate mixture of quartz and felspar—the ground-mass pseudosphærolitic, giving a black cross between crossed Nicols. This encloses a few crystals of *felspar* and *quartz*. *Mica* in brown flakes and green (pleochroic) or colourless (bleached). *Garnets* minute, bright with strong outlines (isotropic). The section is plentifully besprinkled with slender spindles of a pale green non-pleochroic substance which remains dark between crossed Nicols. *Sphene* brown, feebly dichroic, enclosed in the *quartz*. *Kaolin* after felspar. Compare with slide 34.

[34] Quartz Felsite: HELVELLYN DYKE. Porphyritic crystals of *quartz*, *felspar*, and *biotite* in a microfelsitic matrix, here and there feebly pseudosphærolitic. *Quartz*, clear; numerous minute cavities with moving bubbles; also enclosing portions of the matrix. Felspars both *orthoclase* and *plagioclase* in large crystals, one showing microperthite structure. *Biotite* mostly green, a little brown. *Apatite* a very little, and a few minute garnets (isotropic). By

reflected light, note that the red colour of the hand specimen is due to the action of the iron-oxides upon the kaolinised felspars. Compare with slide 8.

[4] Buttermere 'syenite': SCALE FORCE. Cut from a flesh-coloured specimen of medium granitic texture. A granular intergrowth of *quartz* and *felspar*, the latter predominating as matrix and often penetrating the former. Quartz with sharp rectangular outlines impressed on the interstitial pellucid crystals, the latter extinguishing uniformly in patches over wide areas. Microperthite structure of felspar predominating. 'Large patches have more or less the aspect of porphyritic constituents as if a considerable amount of felspar substance had first separated as distinct crystals and then the remainder of the felspar substance had intercrystallised with quartz to form the matrix' (Teall). Ferromagnesian component after *hornblende* plates is now in a chloritoid state giving feeble pleochroic effects. Iron oxides (hæmatite, magnetite, limonite) accompany the above secondary products. Examine by reflected light and compare with slide 4a.

[4a] Granophyre (Rosenbusch): ENNERDALE. Slide cut from a sombre fine-grained specimen. A granophyric intergrowth of *quartz* and *felspar* is here beautifully exhibited, the two minerals polarising in uniform tints over a greater part of the slide. A radial grouping is common with occasionally central strongly polarising grains. The ferromagnesian component is scattered uniformly throughout the slide in small crystals of green *hornblende*, a few of which are still fresh and strongly pleochroic, but for the most part represented by a chloritoid substance with but feeble action on polarised light; associated with this are a few specks of reddish-brown somewhat translucent *ilmenite*, powdered over with silvery *leucoxene* (best observed by reflected light), and also by a few grains of *magnetite*. *Apatite* is plentiful, enclosed in the *hornblende*, but elsewhere it is a little difficult of identification and needs to be carefully sought for. Compare slide 4.

[16]. Porphyritic diabase: EYCOTT HILL. *Plagioclase* crystals (labradorite) in large tabular plates, showing Carlsbad and also albite twinning, frequently encroaching upon each other, but never interfered with by the remaining components; are porphyritically developed in a vesicular ground-mass, consisting mainly of *iron oxides* with numerous small lath-shaped twinned *felspars* and a sap-green dichroic ferriferous fibrous mineral replacing a *rhombic pyroxene*.

[19]. Quartz Gabbro: CARROCK FELL. *Plagioclase* in rectangular plates (some very clear, others kaolinised), with *quartz* filling up all the interstices. *Diallage* of a pale reddish-brown tint, ophitic in

relation to the smaller prisms of felspar. *Magnetite* and *chlorite* after diallage. *Apatite* doubtfully present.

[18]. Gabbro: CARROCK FELL. These plutonic representatives of the Andesitic lavas show considerable variation in texture. The *plagioclase* is much more kaolinised, and the slide generally less fresh than the preceding slide 19, with which it must be compared. The specimen was obtained nearer to Clifton Ward's 'Trap' than No. 19. The *diallage* is replaced to some extent by a green *rhombic pyroxene*, and magnetite plates are very abundant. *Quartz* is less plentiful in this slide, micro-pegmatite here and there taking its place. *Apatite*, as small hexagonal sections, is present in the magnetite and elsewhere.

[3a]. Diabase (altered Dolerite): CASTLE HEAD, KESWICK. An example of a much-altered fine-grained dolerite. The *plagioclase* is very turbid; *augite* often plentifully twinned; *biotite* brown; iron-oxides in brown cubes. *Quartz*, chlorites serpentinous pseudomorphs as secondary products.

[5]. Chiestolite slate: SINEN GILL, SKIDDAW. This slide contains numerous transverse and longitudinal sections of *chiestolite* prisms embedded in a fossiliferous slate, consisting of black and white *mica* flakes, grains of *quartz* and *iron-oxides*, arranged in the parallelism characteristic of cleaved slate. The opaque matter occupying the centre of the chiestolite prisms is carbonaceous.

NOTE—COLEOPTERA.

Lathrobium rufipenne in Lincolnshire.—Last Whit Monday, May 22nd, while working for Coleoptera, in the neighbourhood of Brigg, on the banks of the Ancholme, early in the afternoon, I found a couple of specimens of the very rare *Lathrobium rufipenne* Gyll., on the mud, sheltering from the rays of the then very powerful sun. This beetle does not appear to have been taken in this district before, the records given for it by Rev. Canon Fowler in his 'Coleoptera of the British Islands' being as follows:—'Very rare; Horning Fen and other fen localities; Coleshill, Sutton Park, Knowle, Bewdley Forest, and Cannock Chase; Barton Moss, Manchester, in sphagnum; Stretford and Staly Brushes, Cheshire.'—JOSEPH COE, Hull, July 24th, 1893.

NOTE—MOLLUSCA.

A variety of Limnæa palustris.—On the 15th of June, Mr. J. E. Crowther, of Elland, whilst searching for shells at Shirley Pool, the home of the large Spearwort (*Ranunculus lingua*), found a specimen of *Limnæa palustris*, with markings resembling the var. *picta* of *Limnæa peregra*. The bands are seven in number, but only commence on reaching the body whorl, and would convey the idea that the mantle of the animal had suffered some injury. The shell is only a small one, but looks very pretty with its unusual markings.—WM. NELSON, Crossgates, July 5th, 1893.

August 1893.

NEWTON'S DICTIONARY OF BIRDS.

A | **Dictionary of Birds** | by | ALFRED NEWTON | assisted by | HANS GADOW | with contributions from | RICHARD LYDEKKER, B.A., F.G.S., CHARLES S. ROY, M.A., F.R.S. | and | ROBERT W. SHUFELDT, M.D. | (late United States Army). | Part I. | (A.-GA.) | London : | Adam and Charles Black. | 1893.

The 'Dictionary of Birds' has long been looked for by ornithologists, and we think Professor Newton has exercised a wise discretion in deciding to commence issuing it at once and in four parts, the first of which (A.-GA.) has already appeared, and the second is to appear in October.

The work is mainly based on articles contributed by the author to the Ninth Edition of the *Encyclopædia Britannica*, but with large additions by himself and the other scientists named on the title page. Of these additions the most important are the anatomical papers by Dr. Gadow, which now supply a source of information which has long been greatly needed, and, so far, has not been made available in a handy form for students and others who wish to study ornithology scientifically. Of not less value, too, in their respective lines are the articles contributed by Mr. Lydekker, Professor Roy, and Dr. Shufeldt.

Of Professor Newton's own contributions it would be impossible to speak too highly. There are occasions when all praise may be considered superfluous, and this is one of them. Where all is good it seems needless to draw attention to special portions. The notices of the 'Bustard,' 'Capercally,' 'Cuckow,' 'Dodo,' 'Eagle,' and the chapters headed 'Eggs,' 'Extermination,' will each be found to contain much which is of practical value and interest, including in a condensed form all the information up to date required by the student; each subject being dealt with in a masterly and most scholarly manner, and on strictly scientific lines.

The usefulness and beauty of the work are much enhanced by electrotypes taken from the woodcuts which illustrate Swainson's 'Classification of Birds,' also from other sources which have been duly acknowledged by the author.

Taken as a whole we consider that no such excellent and useful work, on its special subject, has appeared in this century, and we are sure that the possession of the first part must create a strong desire to see the remainder. When completed it will be found a most welcome and indispensable addition to the working library of the scientific ornithologist as well as a book of reference giving equal facilities to those who have hitherto had little acquaintance with the subject.—J. C.

FORMATION OF A LINCOLNSHIRE NATURALISTS' UNION.

A MEETING of Lincolnshire naturalists was held at Mablethorpe on June 12th for the double purpose of investigating the natural history capabilities of the district and of forming a Lincolnshire Naturalists' Union similar to the one in Yorkshire.

Several naturalists, anxious not only to be on the spot early on the Monday morning, but also desirous of instituting a more thorough search than could be done in the short space of time at disposal on the actual day of the excursion, arrived on Saturday, and were well accommodated at the 'Book-in-Hand' Hotel.

The weather was certainly not all that could be desired, for the sun persistently refused to show its face, and a cold wind blew in from the sea, rendering 'great catches,' for entomologists at any rate, out of the question, while at times a few drops of rain fell; yet, despite this forbidding aspect of the weather, by eleven o'clock about thirty naturalists from all parts of Lincolnshire, and a few from Yorkshire, had assembled at the station and proceeded by rail to Theddlethorpe, then working along by the drain-sides to the coast, where they spread over the sand-hills and beach, some very interesting captures being soon reported. The Rev. C. W. Whistler found a Natterjack Toad nestling in its burrow, and when it was 'unearthed,' its peculiar gait, so different from that of the common toad, excited considerable attention, and shortly afterwards Mr. Mason found another one. On the Samphire beds, just north of Theddlethorpe, the burrows of two species of *Bledius* were very conspicuous, and there must have been many millions of these beetles there, for as far as the eye could see their 'casts' were plainly visible. In addition to the perfect insect, both eggs and larvæ were also obtained.

The ornithologists had been particularly energetic and had extended their investigations as far as Saltfleetby, and were perhaps more successful than any other section.

The time at disposal was, however, very short, and by three o'clock most of the excursionists had found their way back to Mablethorpe to the 'Book-in-Hand,' where they did ample justice to a most liberally provided luncheon, after which a general meeting was held, at which Professor L. C. Miall, F.R.S., presided. Letters were received from Rev. G. D. Ash, Rev. W. Fowler, M.A. (Liversedge), Rev. H. A. Barker, Mr. Wm. Denison Roebuck, F.L.S., and others regretting their inability to be present. The chairman, in his opening speech, remarked that their little ramble that morning had shown them how great were the facilities in Lincolnshire for the study

of natural history, and what a fair prospect was opened out for the formation of a Lincolnshire Naturalists' Union, for the county of Lincoln had peculiar features of its own which could not be excelled, if equalled, by any other county.

Mr. F. M. Burton, F.L.S., F.G.S., then formally proposed that a Lincolnshire Naturalists' Union be formed, and Rev. Canon W. W. Fowler, M.A., seconded, and Rev. E. A. W. Peacock supported, the proposition. This was unanimously carried, and Mr. John Cordeaux, M.B.O.U., then proposed that the Lincolnshire members present form a provisional committee with Mr. Walter F. Baker as secretary. Mr. F. Arnold Lees seconded, and the motion was carried.

The Rev. Canon W. W. Fowler, M.A., F.L.S., then proposed that a hearty vote of thanks be accorded to the originators of this excursion, Mr. Walter F. Baker, Mr. Joseph Coe, and Mr. J. Larder, and this was duly seconded and carried. A vote of thanks to the chairman concluded the meeting.

It had been intended to hold sectional meetings, but time being so short it was decided to have the reports sent in in writing, and the following have been received:—

For the geologists, Mr. F. M. Burton, F.L.S., F.G.S., reports as follows:—Although, in the way of investigation, the locality chosen for the excursion could not, from its very nature, be favourable to Geology—the whole of the land for miles round being covered by peat and silt—yet a flat sandy shore, like that at Mablethorpe, has many points of interest for the geological student, as well as for the biologist and botanist. The boulder clay of the great glacial age lies under these alluvial deposits, and, in a disused brick-pit at Theddlethorpe St. Helens, where this clay until lately was worked—and in which a good sized boulder was lying—part of an old Roman Bank is exposed. [See note appended to this report kindly communicated by the Rev. C. W. Whistler, the Vicar of West Theddlethorpe.] The chief interest attaching to this district, so far as geology is concerned, lies in the question—What comes under the boulder clay?—and good work may be done by any geologist, or naturalist, who will take the trouble to investigate any wells, or borings, with a view to its discovery.

Only recently, at a meeting of the Geological Society of London, on the 24th May last, in a paper on some recent borings at Alford, Willoughby, and Skegness, Mr. Jukes Browne disclosed the existence of an unsuspected anticlinal axis, bringing up Lower Cretaceous rocks beneath the drift; and a good field for discovery, by similar investigations, lies open to those on the spot, who are willing to undertake them.

A low flat sea-shore like that of Mablethorpe, with its unrivalled stretch of sands, is always a matter of interest to the geologist, as, from it can be traced the origin of many similar strata in past ages. The ripple marks and water runnels in the sands have their counterparts in the Yorkshire flagstones, the thin shales of the Keuper, and other deposits of a like nature; and the way in which these are produced can only be arrived at, and verified, by the study of similar actions at the present time.

In some places, particularly near the mud-flats of Saltfleet, on turning up the soil, numerous well-defined laminations of alternate sand and mud were met with. These are caused by the occasional overflowing of the sea, charged with mud and silt, forming a layer, which is again covered over by the blown up sand; while, in other places, the difficulties in pronouncing strata to be of marine or terrestrial origin, were well exemplified in the fact of finding some Three-spined Sticklebacks (*Gasterosteus spinulosus*), which are fond of brackish water, lying dead in the dried-up channels and mud-holes, mixed up with crabs, zoophytes, ray's egg-cases, land, freshwater, and marine shells, and countless thousands of the little shore-loving mollusc (*Assimineia grayana*), which abounds on the fitties at Cleethorpes, and is met with generally in the salt-marshes of our eastern coasts.

And now a word about the high banks of sand running all along the coast, and the mode of their formation. These banks, begun by the hand of man and increased by the action of the wind, present a feature which adds much to the quiet gray beauty of the scenery. The way in which this increase is effected may be seen any day when a strong wind is blowing towards the land. At such times the dry sand is in motion, and rushes in clouds, with a stinging effect, towards the barrier, helping to pile it up, and covering in its course every pebble, waif, and shell; each obstacle with its long drawn talus of sand away from the wind's direction—

As slopes a wild brook on a little stone.

The sea, as is often erroneously thought, has had, and can have, no hand in this. The sea is always a leveller, and if the tides were high enough, and strong enough, it would sweep away the refuge of sand by undermining its base—but the bank here has become so matted and protected by the Sea Buck-Thorn (*Hippophaë rhamnoides*), the Sea Maram (*Psamma arenaria*) with its fine glaucous foliage, *Elymus arenarius*—the Icelanders' substitute for corn—and other grasses; till, aided by the continued drifting up of the sand, the bank has become well-nigh, if not absolutely, impregnable—so

far, at all events, as any force is concerned which so narrow and shallow a sea as the German Ocean can bring against it. These are some of the geological lessons to be learned from a walk along a shore like that of Mablethorpe; and a study of the different sand-marks, tracks, and worm-casts; the thrown-up fragments of wood, shells, and other waifs of the sea, will go far to the correct reading and mode of deposit of similar ancient tidal shores, long done in stone—whether, for instance, they have been deposited on a quiet or rough coast; whether any rivers or streams flowed through them, bringing the products of the land to mingle with those of the sea; or whether the region has been influenced by ice, in which case, as at Mablethorpe, stones and shells from higher latitudes will be met with; and in solving many a questionable appearance which the student without such knowledge is very apt to mistake.

Mr. Whistler's note is as follows:—

The Roman bank is part of the great earthwork which runs the whole length of the Lindsey Marsh from Boston to Saltfleet, and I think still north again. A long stretch from Boston to Wainfleet is used as roadway, and, I am told, was metalled by the Romans themselves. It is so used again for about a mile at Saltfleet. A great deal of the bank has been carted on to the fields about here to improve sandy land. My Churchwarden, a farmer of 72, remembers well when there were no sand-hills over, or on this side of, the Roman bank (it is under the sand at Mablethorpe and below the Mablethorpe brick-field), and the sea line at that date was much nearer the Roman bank. He worked all one Sunday, with every available cart and man, at repairing a gap made in the bank by a heavy gale, some 60 years ago. This gives the date of the present sand-hills as not more than 50 years ago. They have increased rapidly seawards during my five years here.

The botanists were well represented, the following gentlemen being present:—Dr. Thrimbleby, Rev. E. A. Woodruffe-Peacock, F. Arnold Lees, Messrs. J. Larder, B. Crow, and A. R. Yeoman.

The Rev. E. A. W. Peacock writes that the following flowering plants were observed on the sand-hills in the three parishes of Theddlethorpe All Saints', St. Helen, and Mablethorpe.

Ranunculus circinatus Sibth. **Ranunculus sceleratus** L.

Ranunculus trichophyllus Chair. Both the large and small flowered type.

Aquilegia vulgaris L. An escape, without doubt.

Nuphar luteum Sm. In Theddlethorpe All Saints' ditches, perhaps *var. minor* Syme.

Papaver Rhœas L. **P. dubium** L. **P. argemone** L.

Curiously enough *P. somniferum* L., both vars. of which grow here, was not observed on this occasion.

- Lychnis vespertina* Sibth. *Cerastium arvense* L.
Arenaria serpyllifolia L. *Arenaria peploides* L.
Geranium pratense L. In railway ballast at Theddlethorpe Station.
Malva rotundifolia L.
Erodium cicutarium L'Hérit., var. *triviale* Jord. and also Bab. First record for county of Lincoln (F.A.L.).
Trifolium scabrum.
Potentilla reptans L. *Rosa rubiginosa* L.
Myriophyllum spicatum L. About Theddlethorpe All Saints.
Conium maculatum L. *Apium graveolens* L.
Chærophyllum anthriscus Lamk. *Galium verum* L.
Valeriana dioica L. *Erigeron acre* L.
Matricaria parthenium L. Doubtfully wild?
Carduus nutans L. *Crepis virens* L.
Lactuca virosa L. *Sonchus asper* Hoffm.
Tragopogon minor Fries. (The only var. found in Lincolnshire I believe.—E.A.W.-P.)
Armeria maritima Willd. *Lysimachia nummularia* L.
Glaux maritima L. At Theddlethorpe All Saints.
Samolus valerandi L. *Cynoglossum officinale* L.
Lycopsis arvensis L. *Myosotis versicolor* Reich.
Echium vulgare L. *Solanum dulcamara* L.
Veronica anagallis L. *Rhinanthus minor* Ehrh.
Plantago maritima L. *Plantago coronopus* L.
Obione portulacoides L. *Hippophaë rhamnoides* L.
Salix viridis Fries. (F.A.L.). *Salix viminalis* L. (F.A.L.).
Salix cinerea L. (F.A.L.).
Orchis incarnata L. At Theddlethorpe All Saints. A very fine and luxuriant specimen, almost thirty inches high, with three large flowers.
Allium compactum Thuill. at Theddlethorpe St. Helens, and at Mablethorpe. First record for var. for county of Lincoln.
Triglochin palustre L. At Theddlethorpe All Saints.
Triglochin maritimum L.
Zannichellia pedicellata Fries. First record for North Lincolnshire.
Carex arenaria L.
Phleum arenarium L. *Psamma arenaria* R. & S.

Festuca rubra L. So Mr. Arthur Barnett named a specimen from Skegness for me, but I cannot help thinking that it is the *F. rubra* L., i.e., *F. arenaria* Osb.; but it was not creeping as far as I observed. This is a first record for county of Lincoln in any case. Unfortunately I lost my specimens.—E.A.W.-P.

Elymus arenarius L.

The plants which I find, from the evidence of my 'Locality Register,' to be common to all parts of the county I have not noticed in this list. Specimens of most of the rarer ones were taken from the County Herbarium, which, along with the thousands of notes in my 'Locality Register,' are always at the service of working naturalists. This list, considering the short time at the disposal of the botanists, is a very creditable one; for they were deprived for two-thirds of their walk of the great knowledge of Mr. F. A. Lees, who arrived by a later train.

The following entomologists were present:—Professor L. C. Miall, F.R.S., Rev. W. W. Fowler, M.A., F.E.S., and Messrs. T. Gelsthorpe, W. F. Baker, J. Coe, and E. J. Slater.

For the Lepidoptera, the only thing worthy of note was the enormous quantity of the larvæ of the Cinnabar Moth (*Euchelia jacobææ*), all the shrubs and plants on the sand-hills literally swarming with them.

For the Coleoptera, the Rev. Canon W. W. Fowler reports that the weather was extremely unfavourable, as a strong and cold east wind was blowing, and very few therefore were observed, the best being *Bledius bicornis*, which, to judge by the casts thrown up considerably below high-water mark, was very abundant; *Bledius arenarius* was also found and a single specimen of *Dyschirius thoracicus*; *Anomala frischii* also occurred on the sand-hills, with a few ordinary *Dromii*, *Homalotæ*, etc.; these with *Stenus guttula*, *Hydroporus assimilis*, and *H. depressus*, and a few common *Bembidia* made up the list of captures. *Cynoglossum officinale* (the Common Hound's Tongue) was in bloom, and very plentiful, but did not yield a single beetle, although one certainly might have expected to get a few *Centhorrhynchus asperifoliarum*.

For Conchology, Mr. F. W. Fierke, M.C.S., the Rev. C. W. Whistler, M.R.C.S., and Mr. F. M. Burton collected, the first-named giving the following report:—

The investigation of a new district has invariably a healthful influence over the mind of a naturalist, inasmuch as it provides him with material for useful comparative work. It must be confessed it was owing to such selfish motive, as well as a desire to do anything

in our power in promoting the furtherance of the natural history activities of the county of Lincoln, that we were induced to leave the Yorkshire side of the 'muddy' Humber, and to attend the meeting of Lincolnshire naturalists at Mablethorpe. The time at our disposal was short, for we only reached Mablethorpe about 11 a.m., and, by the time we had arrived at Saltfleetby, the place at which operations practically commenced, it was nearly noon.

Taking a rough bird's-eye view, the district presented a striking resemblance to many parts of Holderness, a flat-lying country, with numerous dykes and drains intersecting each other. Such at any rate, were the distinguishing features of our route between Saltfleetby Station and the sand-dunes of the coast. It was, however, soon made plain that the drainage system of the district was not designed to serve agricultural interests to such an extent as appears to be the case in Holderness. The frequent cleansing of the drains seriously interferes with the development of the mollusca inhabiting them. At Saltfleetby there were manifest indications of the dykes having been left undisturbed for some time past, which had favoured the growth of *Physa fontinalis* to the average length of half-an-inch, and to an unusual development of that elegantly formed shell *Bythinia leachii*, which in some few instances had been such as almost to rival in size its clumsy-looking relative, *B. tentaculata*. Both species were exceedingly abundant; in fact, the pectinibranchiate mollusca were uncommonly well represented in the dykes of the route. A short distance from the coast we halted by the bank-side of a wide drain which had an average depth of about eighteen inches of water, a light sandy bottom, and contained very little vegetation. It was not difficult soon to distinguish grovelling at the bottom, the heavy form of *Viviparus contectus*. On the other side of the road one more gill-breathing mollusc occurred plentifully on a species of *Enteromorpha* which covers the surface of the water. This was *Valvata cristata*.

With the exception of the locality where *Viviparus* was taken there was, everywhere over the route, a luxuriant growth of aquatic vegetation; in places the surface was covered with *Lemna trisulca*, the less generally distributed *L. gibba*, and here and there the unmistakable reniform-shaped leaves of the frogbit (*Hydrocharis morsus-ranae*). The uppermost whorls of the shell of *Limnæa stagnalis* were occasionally to be observed as the animal would be struggling in the mass of weeds from which it seemed to be endeavouring to extricate itself, and some well-developed specimens of *Limnæa peregra* were dotted over the surface of the vegetation, a by no means uncommon habit of this ubiquitous species.

An examination of the water-weeds and caddis-cases requires time and patience, but the trouble so expended has often its reward. The caddis-cases particularly form a very profitable study; the curious animal which you will invariably find in them is a veritable conchologist, for it collects the shells of the pond or dyke and glues them together, forming for itself an almost invulnerable stronghold in which it resides. It was to one of these cases we were unquestionably indebted for directing our attention to a more careful sorting of the water-weeds for that rare freshwater mollusc *Segmentina nitida* (Mull.), of which we afterwards obtained several living specimens.

Lastly, in regard to the aquatic molluscs, we observed several instances of abnormal development. *Planorbis umbilicatus*, which is particularly common near Saltfleetby, appears to affect in many specimens a very striking swollen character near the mouth of the shell. One specimen of this species exhibited a very odd shape; the shell had apparently received some injury at one time, resulting in the interference of the growth of the whorls on the normal plane. A specimen of *P. vortex* was taken with the whorls very much disjointed, giving the shell a distinct conical appearance. In both cases the shells contained the living animal, which remained perfectly lively and well in the jars of water in which they were placed for subsequent observation.

The following aquatic species were taken on the route:—*Pisidium pusillum*, *Sphærium corneum*, *Valvata cristata*, *Bythinia leachii*, *B. tentaculata*, *Viviparus contectus*, *Limnæa palustris*, *L. stagnalis*, *L. peregra*, *Physa fontinalis*, *Planorbis contortus*, *P. corneus*, *P. umbilicatus*, *P. carinatus*, *P. vortex*, and *Segmentina nitida*.

The weather had been much too dry to have made search for terrestrial mollusca successful, even had we had time on our hands to have done so. The Rev. C. W. Whistler had succeeded in obtaining a specimen of *Hyalinia fulva*, and on the previous day Mr. J. Coe (Hull) collected on the coast near Mablethorpe the shells of *Helix aspersa* var. *exalbida*. *H. caperata* was noticed on the coast. The broken shells of *Helix nemoralis* were fairly abundant on the sand-dunes, where they appear to have met their unhappy fate through some enterprising members of the feathered tribe.

Mr. John Cordeaux, M.B.O.U., gives the following as a list of the birds seen at Mablethorpe, on June 12th, and the two preceding days, with special notes on some of the species:—

Thrush.	Corn Bunting.	Red-legged Partridge.
Blackbird.	Yellow Hammer.	Stockdove.
Wheatear.	Reed Bunting.	Corncrake.
Whinchat.	Meadow Pipit.	Ringed Plover.

Stonechat.	Lark.	Sanderling.
Whitethroat.	Cuckoo.	Dunlin.
Sedgewarbler.	Kestrel.	Redshank.
Linnet.	Wild Duck (<i>Anas boschas</i>).	

Notes on the above :—

Thrush. Numbers frequent the sand-hills for the snails, which supply a source of food both in the summer and winter.

Wheatear. Several seen, and two broods along with the old birds, the one north and the other immediately south of Saltfleet Haven.

Stonechat. Several pairs, also young, but chiefly confined to the land side of sand-hills—both this and the Whinchat frequent the sands, searching for small flies in the ridge of seaweed brought in with the tide.

Lark. An extremely pale sand-coloured variety seen in one of the warrens.

Stockdove. Several pairs, and nesting in the rabbit-burrows or the warrens.

Ringed Plover. Both the greater and the smaller race were seen, the former evidently nesting on the coast.

Sanderling. Two seen in company with one of the smaller race of Dunlin, in summer plumage, and one of the small Ringed Plover. June 12th is a late date for the Sanderling, a species which ought at this time to be at its nesting quarters within the Arctic Circle. I drove close past these little birds and observed that the neck and upper breast were closely spotted with brown, as in summer, but the upper parts were mainly ash-grey, as in winter.

Redshank. About five pair near Saltfleet, where they were evidently nesting.

With regard to the other branches of natural history only casual notes were made. A small Pike was obtained in one of the drains, also two species of Newts, the Frog, the Common Toad, the Natterjack Toad, and one of the false scorpions, *Chelifer degeerii*. The Polecat appears to be common in the district.—W. F. BAKER.

NOTE—ORNITHOLOGY.

Migratory Birds in the Trent Valley.—Wednesday, 9th August, was a hot day with a strong wind from the east and north-east. At nine o'clock in the evening the wind dropped and lightning commenced. A few hours later a thunderstorm was raging, which lasted with short intervals till 8 a.m. Several times during the night and notably at about 3 a.m. I heard large flocks of waders passing overhead to the south-west. Though we were only on the verge of the storm the lightning was something terrific, flashes occurring every few seconds. The travelling birds seemed to be much alarmed, continually crying out as they passed overhead. As far as I could make out the flocks consisted of Whimbrels (*Numenius phaeopus*) and Knots (*Tringa canutus*), but probably other species were present.—F. B. WHITLOCK, Beeston, Notts, August 11th, 1893.

THE STUDY OF DIATOMS.

An Introduction | to the Study of the | Diatomaceæ, | By | FREDERICK WM. MILLS, F.R.M.S., | . . . | . . . | with a | Bibliography, | by JULIEN DEBY, F.R.M.S. | — | London : | Iliffe & Son, . . . | . . . | . . . | 1893. 8vo. xii + 243 pages.

This little work is modestly styled an 'Introduction' by its author, and it is truly such, being very elementary in nature. Of the 240 pp. comprising the text, the work proper only occupies 77 pp., the remainder, pp. 78-240, being the Bibliography of Mr. Julien Deby. With limited space at our disposal, we can but glance at the salient points of the work. On p. 3 we are informed that Diatoms 'have been known to survive nearly a quarter of a century in their natural element,' etc.; this quoted instance of 'longevity' omits the important fact that in that long period there must have been many cycles of generations—each of comparatively brief existence. In chapter ii. the structure, internal and external, of these lovely little organisms is but cursorily treated; and, in lieu of information on the chemistry of the endochrome, references only are given, and those to authors inaccessible to ordinary British readers. The third chapter, on the movements of Diatoms, is very fairly rendered, and the quotations well chosen. The fourth chapter gives a classification, based upon that of Prof. H. L. Smith (one of the few American authors whom it is safe to follow!), which will be found very useful for reference by any student. With respect to the modes of reproduction, it 'goes without saying' that the dicta of the illustrious DeBary represent practically all that is known. Many diatomists will, however, not accept the new-fangled term *Zygosperm* as a substitute for the older word *Zygospora*—and the mass of practical workers will object to the conclusions quoted from Dr. Dallinger. These are so important that we cite them. He says, pp. 39-40, 'binary sub-division cannot take place in genera with unequal valves, as it is universally acknowledged that the two new valves which are formed in the process of binary sub-division must stereotype themselves on the old valves'—this is exactly what does *not* take place! A very distinguished observer writes to us, 'the young valves *never* stereotype themselves *on* the parent valves . . . they are unquestionably developed within the parent valves.' The use of the word 'stereotype' by Dr. Dallinger appears to be a lapsus calami, as, if anything approaching a stereotyping occurred in vegetative self-division, the markings would also 'stereotype' themselves. On this our friend writes, 'both the markings and the external forms do not acquire their perfect structure until each has emerged from its parent valve, . . . and why each young valve then, and not before, completes its structural adornments, is more than

I shall ever know'! Again, Dr. Dallinger says (respecting binary sub-division), 'this process cannot take place in those genera in which axes cross one another like *Campylodiscus*, or in those in which the two valves, although equal, yet constantly unite in such a way that the similar parts alternate with one another, as may be seen in *Asterolampra*.' Once more 'a slip of the pen'! 'the valves of no diatom-frustules, except those developed from the sporangial brood, have equal valves, i.e., valves of exactly the same dimensions—and every diatom subdivides in the usual fashion, whether its axes do or do not cross each other.' With the remarks of the veteran observer, whom we quote, we can but entirely agree; and would refer any one who was curious on these points to such memoirs as O. Muller, on *Melosira (Orthosia) arenaria*; or Wallich, on the relation between the development, reproduction, and markings of the *Diatomaceæ*. On page 41 the word 'thallus' is correctly used in its pristine sense, but it is worthy of remark that the term 'stipes' is more usually employed to denote the long or short, granular or hyaline, pedicels or branchlets, on which are borne the stipitate (not stipate) species: in English books the word thallus is usually taken to denote the irregular fibro-mucous masses, or branching quasi-fronds, in which many of these forms live embedded. The notes upon mounting, especially 'in situ,' are hardly satisfactory. No varnished cells (asphalt, 'coachmaker's-black', or 'black-japan,') should be used unless they have been gently baked, to harden them. To mix benzol with gold-size is superfluous; but, when closing the cell, in wet mounts, both the top of the ring and the edge of the cover-glass should be lightly touched with the gold-size; this makes the 'joint' doubly secure. An excellent medium for fluid mounts is distilled water impregnated with a little camphor, creosote, or carbolic acid—we agree with Mr. Mills that in water alone these objects will soon decompose. No mention is made of the methods of mounting the frustules in Canada-balsam, monobromide of naphthaline, etc., while the wonderfully concocted 'nostrum' devised by Mr. E. M. Nelson is given *in extenso*! Among matters connected with apparatus it seems an oversight that the name of Ross & Co. should be omitted; and among lamps the 'Bockett-lamp' of Collins surely might have found a place? On objectives one remark is noteworthy, viz., that it is not advisable to use a higher power than a $\frac{1}{12}$ in.; this is sound sense, and we advise its consideration by the followers of 'twenty-fifths and fiftieths'—as all the best work has been performed with comparatively low powers. The chapter on Photography will repay perusal by the dilettante microscopist, as much care has been bestowed upon the details of

process and accessories—but no micro-photograph has yet equalled the splendid handiwork of first rate draughtsmen, such as the late Tuffen West, Dr. Greville, and Huth. Without being hypercritical upon so modest a compilation as that of Mr. Mills, we must confess ourselves somewhat disappointed.

The major part of the volume is devoted to the Bibliography of Mr. Deby (assisted, we believe, by that excellent authority, Mr. F. Kitton), and this is simply splendid—beyond all praise. It is, in fact, worth all the cost of the book—and no student of the Diatoms will, in the future, be able to dispense with the references it affords.

The type and 'get up' of the work are very good, but revision has been sadly needed, as evinced by the number of typographical errors, and words and proper names mis-spelt. W. B. T.

NOTES—BOTANY.

Rosa spinosissima in Lincolnshire.—This rose has at length been recorded well within the county, by my brother, who gathered it in Raithby Parish, near Louth, in June. The specimen has been kindly identified for me by Mr. F. Arnold Lees, F.L.S.—J. LARDER, Louth, August 4th, 1893.

Rosa villosa sub-sp. mollis (Sm.) in North Lincs., etc.—This variety has been found on the chalk in Welton Parish, near Louth, and identified by Mr. F. A. Lees, who writes that this montane rose, growing in low east England, makes an interesting record. Among other plants submitted to and kindly identified by Mr. Lees were *Juncus obtusifolius* (Saltfleetby) and *Arabis hirsuta*, the latter gathered by Mr. A. R. Yeoman, near Goulceby.—J. LARDER, Louth, August 4th, 1893.

Ash Trees in Bloom.—Three male Ash trees (*Fraxinus excelsior*) growing near Penrith have this year been covered with bloom whilst in full leaf. So singular and beautiful did they appear as to become unrecognisable to many. It is no doubt due to the remarkably warm and dry spring that we have had. This tree is rarely seen blooming in such perfection whilst in leaf, the flower coming earlier. I should like to know if this has been noticed in other places.—J. CHARLES SMITH, Nandana, Penrith, 13th July, 1893.

Mud Carex (*Carex limosa*).—I have found this *Carex* growing at Woodside Moss in North Westmorland. It may, I think, be considered rare in England, especially in the South, but common in Scotland.—J. CHARLES SMITH, Nandana, Penrith, 13th July, 1893.

Mr. J. C. Smith sent me a specimen of *Carex limosa* from Woodside Moss, so that I can confirm the correctness of the name. I have only seen it from one other station in Westmorland, at 1,000 feet over Kentmere, where it was found by Mr. J. C. Martindale. It would be interesting to know what is the altitude of the Woodside station. I should certainly not say that genuine *C. limosa* was common in Scotland.—J. G. BAKER.

Paris quadrifolia with seven leaves.—After examining a number of specimens of Herb Paris (*Paris quadrifolia*), growing luxuriantly in a damp shady situation at Woodside Moss in North Westmorland, I found that plants with five leaves were very common, whilst those with six were almost as plentiful as those with five. I obtained nineteen specimens with seven leaves, six gathered within a space of six square yards. On further examination I found one out of the nineteen plants had five outer segments of the perianth instead of four, and nine anthers instead of eight. Another seven-leaved specimen had also five outer segments of the perianth.—J. CHARLES SMITH, Nandana, Penrith, July 13th, 1893.

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Physical Features of the North of England.

GEOLOGY AND PALÆONTOLOGY, 1892.

THE present instalment has been compiled and edited by

ALFRED HARKER, M.A., F.G.S.

Previous instalments of the Bibliography of Geology and Palæontology have appeared as follows:—

For 1884,	in 'Naturalist,'	Dec. 1885,	pp. 394-406.
„ 1885,	„	Nov. 1886,	pp. 349-362.
„ 1886,	„	June 1888,	pp. 178-188.
„ 1887,	„	Feb. 1889,	pp. 61-77.
„ 1888,	„	April-May 1890,	pp. 121-138.
„ 1889,	„	Nov. 1890,	pp. 339-350.
„ 1890,	„	Oct.-Nov. 1891,	pp. 313-330.
„ 1891,	„	July-Aug. 1892,	pp. 219-234.

The following list includes a few entries omitted in former instalments. The chief abbreviations employed are:—

Q.J.G.S. = Quarterly Journal of the Geological Society, vol. xlviii.

G.M. = Geological Magazine, decade 3, vol. ix.

Rep.B.A. = Report of British Association Meeting for 1891 (at Cardiff).

Nat. = Naturalist.

Res. = Research.

Tr. Leeds G.A. = Transactions of Leeds Geological Association, Part vii.

Tr. Manch. G.S. = Transactions of Manchester Geological Society, vols. xxi. xxii.

Mem. Pr. Manch. L.P.S. = Memoirs and Proceedings of Manchester Literary and Philosophical Society, ser. 4, vol. v.

Pr. Liv. G.S. = Proceedings of Liverpool Geological Society, vol. vi., part 4.

Pr. Yorks. G.P.S. = Proceedings of Yorkshire Geological and Polytechnic Society (N.S.) vol. xii., parts I. and II.

N.H.J. = Natural History Society.

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Sept. 1893.

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- ANON. [signed 'M. H. M.']. Linc. N.
Submerged Forest [at Mablethorpe]. *Nature*, June 9th, p. 128.
- ANON. [not signed]. Lancs. S.
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- ANON. [not signed]. York Mid W.
Our Photograph: a fine Carboniferous Tree [describing a *Sigillaria* found in the Ganister Quarry of Messrs. Rowland in the Meanwood Valley]. *Tr. Leeds G.A.*, pp. 51, 52, and plate.
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- JAMES E. BEDFORD. York Mid W.
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JAMES E. BEDFORD.

York N.W.

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C. B[ROWNRIDGE].

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C. B[ROWNRIDGE].

York N.W.

Excursion to Horton-in-Ribblesdale [see Nat., June, pp. 183-185]. Tr. Leeds G.A., pp. 67-70.

CHARLES BROWNRIDGE.

York N.W.

The Yorkshire Naturalists' Union at Horton-in-Ribblesdale [Geology]. Nat., June, pp. 133-135.

G. W. BULMAN.

Northumberland, York Mid W.

Drift Coal in Sandstone [contending for the origin of certain coals from drifted vegetation]. G.M., April, pp. 151-154.

- A. C. G. CAMERON. York S.E.
On the Continuity of the Kellaways Beds over extended Areas near Bedford, . . . etc. . . . [giving some particulars of the Kellaways rock as cut by the Hull and Barnsley Railway at Drewton]. G.M., Feb., pp. 66-71.
- GEORGE W. CARD. Durham.
On the Flexibility of Rocks; with Special Reference to the Flexible Limestone of Durham [occurring at Marsden and near Sunderland; a magnesian limestone with a high degree of flexibility]. G.M., March, pp. 117-124.
- GEORGE W. CARD. Durham.
On the Flexibility of Rocks [referring to the limestones of Marsden and Sunderland]. G. M., Nov., p. 525.
- [W. LOWER CARTER, Secretary.] York Mid W.
Excursion to Hardcastle Crag [composed of Kinderscout Grit isolated by a land-slip: the glacial phenomena of the district are also noted]. Tr. Leeds G. A., pp. 59, 60.
- [W. LOWER CARTER, Secretary.] York S.W.
Excursion to Conisborough [see Nat., Nov. 1891, pp. 335, 336]. Tr. Leeds G. A., pp. 60, 61.
- [W. LOWER CARTER, Secretary.] York Mid W.
Excursion to Micklefield [to examine coal-mine and also quarries in the Magnesian Limestone: the latter rock contains 56.73 per cent. of carbonate of lime and 40.07 per cent. of carbonate of magnesia]. Tr. Leeds G. A., pp. 62, 63.
- [W. LOWER CARTER, Secretary.] York N.E.
Excursion to Rokeby and the Greta [see Nat., July, pp. 214, 215]. Tr. Leeds G. A., pp. 70-72.
- SAMUEL CHADWICK [Secretary]. York N.E., S.E.
The Yorkshire Boulder Committee and its Fourth Year's Work. Nat., May, pp. 155-158.
- W. C[HEETHAM]. York Mid W.
Excursion to the Yeadon and Guiseley Railway Cutting [giving the general character of the exposures in the ten sections seen]. Tr. Leeds G. A., pp. 65-67.
- THOS. CHILD. York Mid W.
[Fossils found at Yeadon; Calamites, Fern Spores, Stigmaria, *Phacops brongniarti*, Eocrinoids, and Belemnites (sic)]. N. H. J., May 15th, 1892, p. 58.
- E. MAULE COLE. York S.E., N.E.
The Erosion of the Yorkshire Coast. Nat., April, pp. 103-107.
- [E. MAULE COLE.] York S.E.
Excursion to York Dale and Sledmere [see also Nat., Oct. 1891, pp. 305-306]. Tr. Leeds G. A., pp. 58, 59.
- GRENVILLE A. J. COLE. Westmorland.
Note on Mr. Hutchings' Paper on some Lake District Rocks [a letter referring to the Thornthwaite Crag rock, considered to be an andesite]. G. M., Jan., pp. 43, 44.
- GRENVILLE A. J. COLE. Isle of Man.
On Occurrences of Riebeckite in Britain [including a pebble from the Isle of Man]. Mineral. Mag., March 1891, ix., 222-6.
- H. W. CROSSKEY, secretary. Lanc. S., Chesh., Derbysh.,
York S.E., N.E., Isle of Man.
Nineteenth Report of the Committee, consisting of . . . [9 names] . . . appointed for the purpose of recording . . . Erratic Blocks [giving many records of localities, dimensions, and lithological character, with in some cases the source of the boulders]. Rep. B.A. for 1891, pp. 276-299.

J. R. DAKYNS.

York N.W.

The Geology of the Country between Grassington and Wensleydale [with detailed sections, showing that the Yoredale type is not recognisable south of Kettlewell; in the south the Main Limestone is directly overlain by the Millstone Grit, but northward a cherty series intervenes; the top of the Little Limestone is suggested as a convenient base for the Millstone Grit in the country northward; it is noticed that ganister occurs in the Millstone Grit above the Kinderscout Grit, and becomes more pronounced to the north]. Pr. Yorks. G. P. S., pt. ii., pp. 133-144.

JAMES W. DAVIS.

York S.E., Lanc. S.

English Lake Dwellings [with a short account of that at Ulrome and reference to another locality near Preston]. Nat. Sci., March, vol. i., pp. 40-43.

JAMES W. DAVIS.

York Mid W., Lanc., Northumb.

On the Fossil Fish Remains of the Coal Measures of the British Isles; Part I., Pleuracanthidæ [describing and figuring species of *Pleuracanthus*, including three new forms, *P. howsei* from Newsham near Newcastle, *P. obtusus* from Clifton, and *P. serratus* from Newsham]. Sci. Trans. Roy. Dublin Soc., (2) vol. iv., pp. 703-748, pl. lxx.-lxxiii.

R. M. DEELEY.

Derbyshire and Notts.

Glacial Geology [claiming that the Glacial deposits of the Trent valley offer great difficulties to those who deny any considerable inter-glacial submergence]. G. M., Dec., pp. 573, 574.

M. DEMAIN.

York S.W.

The Flora of the Banks [near Clitheroe; quoting an account of the Carboniferous Limestone of the district, and figuring some of its fossils]. Science Gossip, July, pp. 152, 153.

C. E. DERANCE.

Lanc. S., Cheshire.

Notes on the Geology of the Manchester Canal [a general account of the rocks, mostly drift, exposed in the cuttings: erratics from the Lake District and Criffel are found]. Trans. and Proc. Chesterfield and Midl. Inst. Engin., vol. xviii., p. 1 et seq.; 1891.

C. E. DERANCE.

Lincolnshire.

On the Underground Waters of Lincolnshire [giving particulars, with measurements, of numerous shafts, borings, and other sections, and of the capabilities of the several formations as sources of water supply]. Pr. Yorks. G. P. S., pt. i., pp. 22-51.

C. E. DERANCE.

York Mid W., Linc. S., Notts, Lanc. S., and Chesh.

Seventeenth Report of the Committee consisting of . . . [20 names] . . . appointed for the purpose of investigating the Circulation of Underground Waters . . . [etc., giving particulars of borings near Skipton, Bracebridge, Horncastle, Owthorpe, Widnes, Macclesfield, and other places]. Rep. B. A. for 1891, pp. 300-312.

C. E. DERANCE.

Cheshire.

Note on the Discovery of *Estheria minuta* (var. *Brodieana*) in the New Red Sandstone [of Broadhurst's quarry, Alderley Edge, at a much lower horizon than any other English examples of the species]. Rep. B. A., p. 644.

[C. E.] DERANCE.

Lanc. S., Cheshire.

The Glacial Drift [citing evidence in favour of the land-ice theory]. Tr. Manch. G. S., xxii., pt. ii., pp. 49-52.

E. DICKSON.

Lanc. S.

Problems in the Geology of the Neighbourhood of Southport. 1st Rep. of Southport Soc. Nat. Sci. for 1890-91.

- Miss JANE DONALD. York N.W., S.W., Cheviotland.
Notes on some New and Little-known Species of Carboniferous
Murchisonia (describing *M. tatei*, n. sp. from Howick, *M. quadricarinata*
 from Settle, *M. conula* var. *convexa* from Askrigg and Widdale Fell,
 and *M. telescopium* from Bolland]. Q.J.G.S., Nov., pp. 562-574, and
 pl. xvi., xvii.
- JOSEPH FIELD. York S.W.
The Yorkshire Naturalists' Union at Penistone and Dunford Bridge
 [Geology]. Nat., Sep., pp. 258, 259.
- J. J. FITZPATRICK. Derbyshire.
Further Notes on the Deep Dale Bone Cave, near Buxton [recording
 various remains from the midden at the entrance and from beneath the floor
 of the cave itself, the latter including a human jawbone]. Pr. Liv. G.S.,
 pp. 447-452.
- E. J. GARWOOD. Durham.
Concretions in Magnesian Limestone [a brief letter answering Mr. Jukes-
 Browne]. G. M., Jan., p. 44.
- E. J. GARWOOD. Westmorland, Northumb., Durham.
Cone-in-Cone Structure [in the pencil-slates of Swindale near Shap, the
 Carboniferous shales of Northumberland, and the coal of Durham]. G. M.,
 July, pp. 334, 335.
- J. G. GOODCHILD. York N.W.
Notes on the Glacial Phenomena of Upper Ribblesdale. Nat., Aug.,
 pp. 241-246.
- J. G. GOODCHILD. Westmorland, York N.W.
Notes on the Coniston Limestone Series [criticising Mr. Marr's paper on
 this subject. For the Cross Fell district the author gives the following
 downward succession:—Coniston Limestone series 900 feet, Dufton and
 Yarlside rhyolitic rocks 1,100, break in succession (not great), Hilton Moor
 volcanic series 1,000, Hilton Moor Shales (= *corona*-beds of Marr and
 Nicholson) 500, break and probable unconformity, Milburn rocks (equivalents
 of the Borrowdales) 6,500+, Skiddaw Slates 8000+. In the Craven area the
 author considers the Coniston Limestone to pass down into the Ingleton
 Green Slates]. G. M., July, pp. 295-299.
- J. G. GOODCHILD. Westmorland, York N.W.
The Coniston Limestone Series [in reply to Mr. Marr; maintaining that
 the Hilton Moor volcanic rocks are a distinct group below the Coniston
 Limestone volcanics, and that *Trematis corona* occurs on at least two distinct
 horizons in the Cross Fell area; also that the Ordovician tuffs of Craven are
 the equivalents of those of Hilton Moor and Dufton]. G. M., Nov.,
 pp. 526, 527.
- J. G. GOODCHILD. Cumberland and Westmorland.
Observations on the New Red Series of Cumberland and Westmorland,
 with especial reference to classification [emphasising the unity of the whole
 series and the great unconformity beneath it; if a division into Permian and
 Trias be made, the line must be drawn just above the Magnesian Limestone;
 the St. Bees sandstone is included in the Bunter Sandstone group, with
 a thickness of 2,000 ft.]. Trans. Cumb. Westm. Ass., No. xvii. plates i., ii.
- J. G. GOODCHILD. Cumberland and Westmorland.
The St. Bees Sandstone and its Associated Rocks [abstract of views
 stated in preceding paper]. G. M., Dec., pp. 564, 565: Rep. B. A.
- J. G. GOODCHILD. Cumberland and Westmorland.
Notes on some of the Limestones of Cumberland and Westmorland
 [remarks on the formation of limestones in general and an account of those
 of the counties named, with conclusions as to the former physical geology of
 the area]. Trans. Cumb. Westm. Assoc., part xvi., pp. 125-148.

- LEO H. GRINDON. **Lanc. W., Cheshire, Durham.**
Lancashire [;] Brief Historical and Descriptive Notes[.] . . . 1892
 [8vo. cloth, xii. + 355 pages and numerous illustrations: brief references to geology at p. 17; to rock-salt at Fleetwood, also in Cheshire and at Port Clarence, at p. 231; to Mellard Reade's views as to the antiquity of the sandhills, at p. 232; and at pp. 350-355 'the fossils' are treated of, the various fossiliferous localities mentioned, although the fossils themselves are spoken of only in general terms, save *Platycrinus triacontadactylos* at Clitheroe].
- ALFRED HARKER. **York S.E.**
Forest-bed at Hull. Nat., Jan., p. 22.
- ALFRED HARKER. **Westmd., Durham, etc.**
Some North Country Quartzites. Nat., Mar., pp. 73-75.
- ALFRED HARKER. **Westmorland, York Mid W., N.W.**
The Lamprophyres of the North of England [with some account of their petrological characters, their relation to the Shap granite, and speculations on the origin of the rocks; also a special note on the dykes at Cronkley in Teesdale]. G. M., May, pp. 199-206.
- ALFRED HARKER. **Westmorland, Cumberland, York N.W., Durham.**
On Porphyritic Quartz in Basic Igneous Rocks [suggesting a theory of its origin, with special reference to the quartz-grains in the lamprophyre dykes of the North of England]. G. M., Nov., pp. 485-488.
- ALFRED HARKER. **Westmorland.**
New Plant-Beds at Hilton. Nat., June, p. 170.
- ALFRED HARKER. **York S.E.**
The Yorkshire Naturalists' Union at Withernsea [Geology]. Nat., Oct., pp. 298, 299. See also 'Yorkshire Post' and 'Leeds Mercury,' for Aug. 2nd.
- G. HENSLOW. **York S.E.**
Phosphate Nodules [with a very brief reference to the remains of a beach called the Black-rock, near Flamborough Head, in the Gault (Speeton Clay)]
 Medit. Nat., Sept. 1892, p. 238.
- THOMAS HICK. **York W.**
On the present state of our knowledge of the Yorkshire Calamitæ
 [a résumé of modern research and opinion concerning those plants]. Pr. Yorks. G. P. S., pt. i., pp. 1-8.
- BERNARD HOBSON. **Isle of Man.**
On the Igneous Rocks of the South of the Island, and Sections
 through Scarlet Point, with Plans [compare Bibliography for 1891]. Yn Lioar Manninagh, April, vol. i., pp. 337-348 and plate.
- B. J. HOLDSWORTH. **York N.E.**
Holiday Finds [at Whitby; *Belemnites hastata* (sic)]. N. H. J., Oct. 15th, 1892, p. 108.
- BENJ. HOLGATE. **York Mid W.**
The Mode of Deposition and Properties of the Carboniferous Strata of
 Leeds and its immediate suburbs [local details followed by tabular sections showing the succession and thickness of the beds, their probable mode of formation, their properties and uses, etc.]. Pr. Yorks. G.P.S., pt. i, pp. 9-21.
- BENJ. HOLGATE. **York N.E.**
The Yorkshire Naturalists' Union at Rokeby [Geology]. Nat., July, pp. 214-215.
- B. HOLGATE. **York N.E.**
[Glacial Deposits in the Teesdale District described]. Tr. Leeds G.A., pp. 23-25.

- B. H[OLGATE]. York N.W.
Excursion to Grassington [see Nat., Sept. 1891, pp. 266-268]. Tr. Leeds G.A., pp. 53-55.
- [SIR] HENRY H. HOWORTH. York S.E., N.E., N.W.
Did the Mammoth live before, during, or after the deposition of the Drift? [arguing for the pre-Glacial age of the Mammoth in Britain: evidence is drawn from the Hessle gravels, the Kirkdale and Victoria caves, etc.]. G. M., June, pp. 250-258.
- SIR HENRY H. HOWORTH. Linc. S.
The Mammoth and the Glacial Drift. A reply to Mr. A. J. Jukes-Browne [with especial reference to the mammoth remains at Burgh]. G. M., Nov., pp. 502-505.
- WILFRID H. HUDLESTON. York N.E., Lincolnshire.
A Monograph of the British Jurassic Gasteropoda: Part i., No. 5, Gasteropoda of the Inferior Oolite, pp. 225-272, pl. xvii.-xx. [describing many species and varieties, some new, belonging to the families *Turritellidæ*, *Pseudomelanidæ*, *Naticidæ*, and *Rissoidæ*; many from the Lincolnshire limestone of Ponton and Weldon, the Dogger of Blue Wyke, and the Scarborough Limestone of Cloughton]. Palæontographical Soc., vol. for 1891.
- WILFRID H. HUDLESTON. Lincoln, York N.E.
A Monograph of the British Jurassic Gasteropoda; part i., No. 6, pp. 273-324, pl. xxi-xxvi. [describing *Amberleya cf. meriani* and *Littorina phillipsii* from Weldon and Ponton, *A. cygnea*, sp. nov., and *L. polytimeta*, sp. nov. from Lincoln; *A. biserta* from Blue Wyke; *A. cf. meriani* and *L. phillipsii* from Cloughton Wyke; *L. weldonis*, sp. nov. and *L. ædilis* (?) from the Lincolnshire limestone]. Palæontographical Soc., vol. xlvi.
- W. H. HUDLESTON and EDWARD WILSON. York N.E., Lincolnshire.
A Catalogue of British Jurassic Gasteropoda [giving geological horizon, locality, and bibliographical references for more than a thousand species, including many from East Yorkshire and Lincolnshire]. 8vo., pp. xxxiii. + 147, London.
- W. MAYNARD HUTCHINGS. Cumberland, Westmorland.
Notes on the Ash-Slates and other Rocks of the Lake District [describing the microscopic structure and constitution of these rocks, and especially the occurrence of minute sericite, garnet, and anatase, and the formation of secondary feldspars, in part orthoclase]. G. M., April and May, pp. 154-161, 218-228.
- OSMUND W. JEFFS [Secretary]. Cheshire, Cumbd., Derbysh.,
I. of Man, Lanc., York.
Second Report of the Committee consisting of . . . [14 names] . . . to arrange for the collection, preservation, and systematic registration of Photographs of Geological Interest in the United Kingdom [with second list of photographs]. Rep. B.A. for 1891, pp. 321-333.
- E. JONES. York Mid W.
Exploration of the Elbolton Cave [see 1891 list]. Pr. Yorks. G.P.S., pt. i. pp. 105-107.
- Durham and 'North of England.'
T. RUPERT JONES and JAMES W. KIRKBY.
Notes on the Palæozoic Bivalved Entomostraca.—XXX. On Carboniferous Ostracoda from Mongolia [with references to *Bythocypris cuneola* J. & K., as common in the North of England, *Bairdia subelongata* J. & K., well-known from the North of England, *B. amputata* Kirkby, in the Carboniferous of the North of England and the Permian rocks of Durham, and *B. grandis* J. & K., in the North of England]. Ann. & Mag. Nat. Hist., April 1892, pp. 302-307.

Cumberland, Westmorland, Furness.

- T. RUPERT JONES and HENRY WOODWARD.
A Monograph of the British Palæozoic Phyllopora : Part II, pp. 73-124, pl. xiii.-xvi. [describing *Lingulocaris salteriana* and *Peltocaris anatina* from Long Sleddale, *Caryocaris marrii* from Keswick, *Aptychopsis cordiformis* (sp. nov.), from Rebecca Hill, Ulverston ; *A. lapworthi*, *Peltocaris patula* (sp. nov.), *Discinocaris browniana* and *D. gigas* from Skelgill, and *A. angulata* from Troutbeck]. Palæontograph. Soc., vol. xlvi.
- A. J. JUKES-BROWNE. **Linc. S.**
The Mammoth and the Glacial Drift [combating Sir H. Howorth's assertion that the mammoth fauna is never underlain by Glacial Drift, and referring to the section near Burgh]. G.M., Oct., pp. 477-478.
- PERCY F. KENDALL. **Lanc. S.**
Notes of a Section of Drift at Levenshulme, Manchester [the agreement between the directions of transport of boulders, intrusions of boulder-clay, orientation of large boulders, and scratches on rock-surfaces point to the action of land-ice]. Rep. B.A. for 1891, pp. 650-651.
- P. F. KENDALL. **Isle of Man.**
On the Source of some Remarkable Boulders in the Isle of Man [see full Review in Yn Lioar Manninagh, No. 9, Apl.-Oct. 1891, pp. 300-1].
- P. F. KENDALL. **Isle of Man.**
[Important Discovery with respect to Manks Boulders, being a Granite containing blue hornblende, traceable from Ailsa Craig, etc.]. Proc. Isle of Man Nat. Hist. & Ant. Soc., Feb. 10, 1891 ; Yn Lioar Manninagh, No. 9, April-Oct. 1891, p. 236.
- PERCY F. KENDALL. **York S. E.**
Note on the Mode of Preservation of the Bones [of Fallow Deer from Goole Moor : appendix to Mr. Waite's paper]. Nat., June, pp. 169, 170.
- PERCY F. KENDALL. **Northern Counties.**
The supposed Glacial Submergence [presenting the evidence against any considerable submergence in Glacial times]. Tr. Leeds G. A., pp. 43-47.
- PERCY F. KENDALL. **Lanc. S. and Cheshire.**
Glacial Geology, Old and New [a reply to Mr. Reade, advocating the land-ice as against the submergence theory : the author states that in this area the transport of boulders is always from N.W. to S.E., and discusses the alleged exceptions ; he also maintains that the evidence of the shell-fragments in the drift is wholly opposed to the submergence hypothesis]. G. M., Nov., pp. 491-500.
- PERCY F. KENDALL. **Northern Counties.**
Ancient Glaciers in the British Isles ; describing the glacial phenomena of these islands, and especially of the North of England, as bearing out the land-ice theory. The author gives an account of the several local centres of glaciation and then of the complex conditions when the glaciers became confluent, while the Irish Sea was blocked with ice and the Norwegian glacier extended to our east coast. He finds no evidence of submergence]. pp. 137-181 of G. F. Wright's book (*vid. sub.*) with wood-cuts and map.
- A. H. KENNY. **York S. E.**
Erosion of Coast of Yorkshire. Distances in September, 1889, from objects inland to the coast [given in tabular form]. Nat., April 1892, p. 105.
- ROBERT KIDSTON. **Lanc. S.**
Notes on some Fossil Plants from the Lancashire Coal Measures [with catalogues of several collections and a complete list up to date]. Tr. Manch. G. S., xxi. part xii. pp. 401-423, and discussion pp. 423-428.
- R. KIDSTON. **York Mid W.**
On the Occurrence of the Genus Equisetum (*E. Hemingwayi*, Kidston) in the Yorkshire Coal-measures [in the Barnsley district]. Ann. Mag. Nat. Hist. (6), vol. ix. p. 138 et seq.

- R. KIDSTON. York Mid W.
On the Fructification of *Sphenophyllum trichomatosum*, Stur, from the Yorkshire Coal Field [from Cooper's Pit, Worsborough Dale, Barnsley]. Pr. Roy. Phys. Soc. Edin., vol. xi., part 1, pp. 56-62, and plate 1.
- G. W. LAMPLUGH. York S.E.
The Flamborough Drainage Sections [showing how they confirm the rapid westerly attenuation of the drift, the extension of the Basement Clay over part of Flamborough Head, the overlap of the Basement Clay by the Intermediate Stratified Series, and the close connection between this latter and the Upper Boulder Clay]. Pr. Yorks. G. P. S., part 1, pp. 145-148, pl. v.
- B. B. LETALL. York N.E.
[Large Millstone-grit Glacier Boulder (4 ft. \times 2 $\frac{1}{4}$ \times 1 $\frac{1}{2}$) found at Clifton, York]. N. H. J., June 15th, 1892, p. 76.
- G. LEWIS. Nottinghamshire.
A Geological Sketch of the Town and District of Nottingham [with account of the Coal Measures, etc., and geological map]. Trans. and Proc. Chesterfield and Midl. Inst. Engin., vol. xviii. p. 58 et seq., pl. ix. x.; 1891.
- JOSEPH LOMAS. Lanc. S.
Report on the Glacial Deposits between Dingle Point, Liverpool, and Hale Head [describing the sections along the coast, and indicating the sources of many of the boulders found on the shore : particulars are given of 136 large boulders]. Pr. Liv. G. S., pp. 396-406.
- J. LOMAS. Lanc. S.
On some Potholes on the Shore near Dingle Point [pointing out their variety of form—circular, oval, annular, or slipper-shaped, the last probably due to the union of two adjacent holes]. Pr. Liv. G. S., pp. 416-418.
- JOSEPH LOMAS. Cheshire.
On some Faults exposed in a Quarry near Thingwall Mill [in the Lower Keuper sandstones : details of 17 faults are given and a plan of the quarry]. Pr. Liv. G. S., pp. 441-446, with folding plate.
- J. LOMAS. Cheshire.
On a Fault without a Throw [describing a remarkable fault near Caldy Grange Grammar School, West Kirby]. G. M., April, pp. 191-192.
- J. LOMAS. Lanc. S. and Cheshire.
Shapes of Sand Grains [objecting to Mr. Reade's conclusions drawn from the rounded sand-grains of the drift, compared with those of the Mersey district which have probably been derived from the New Red Sandstone]. G. M., Nov., p. 527.
- J. LOVEL. York S.E.
Waterspouts in East Yorkshire [at Langtoft near Driffield on the evening of July 3rd]. Nature, July 4th, vol. xlvi. p. 246. [For description see Hull and Leeds newspapers of July 5th and 6th].
- J. LOVEL. York S.E.
The Cloud-burst at Round Hill, Langtoft [described with map and two views]. Nat. Hist. Journ., Oct., pp. 104-107.
- H. A. MACPHERSON. Lake District.
A Vertebrate Fauna of Lakeland [including the cave-deposits and other Pleistocene remains]. Edinburgh.
- JOHN MARLEY. York N.E. and Durham.
On the Cleveland and South Durham Salt Industry [a short geological sketch followed by details of thirty-five borings]. Trans. N. Engl. Inst. Min. and Mech. Engin., vol. xxxix. pt. iii. Sept., pp. 91-125, pl. liv. lv.
- J. E. MARR. Westmorland and York W.
Lecture to the Craven Naturalists [on 'Greenland's Icy Mountains' : pointing out the light thrown by explorations in Greenland on the conditions of northern England during the Glacial Period]. 'Craven Herald,' Jan. 22nd.

- J. E. MARR. **Lake District.**
Life-Zones in Lower Palæozoic Rocks [illustrated by the distribution of graptolites in the rocks of the Lake District]. Nat. Sci., April, vol. i., pp. 124-131.
- J. E. MARR. **Westmorland, Furness, York N.W.**
The Coniston Limestone Series [tracing the following divisions :—Roman Fell Group (*Corona* beds, 100 ft.); Sleddale Group (Stile End beds, 50 ft., Yarlside Rhyolites, Conglomerate, 10 ft., Applethwaite beds, 100 ft.); Ashgill Group (*Staurocephalus* Limestone, 5 ft., Ashgill Shales, 50 ft.): fossil lists are given for these three groups, which have quite distinct faunas]. G. M., March, pp. 97-110, pl. iii.
- J. E. MARR. **Westmorland, York N.W.**
Further Remarks on the Coniston Limestone [in reply to Mr. Goodchild; upholding the author's division of the group into palæontological zones]. G. M., Oct., pp. 443-447.
- J. E. MARR. **Lake District and York N.W.**
On the Wenlock and Ludlow Strata of the Lake District [The Wenlock is represented by the Brathay Flags, the lower part of the 'Coniston Flags' only. The rest of the Coniston Flags may be divided into Lower, Middle, and Upper Coldwell Beds, and these with the Coniston Grits and Bannisdale Slates represent the Lower Ludlow. The calcareous strata which follow, with the 'Star-fish Bed,' form a transition to the Upper Ludlow, represented by the Kirkby Moor Flags. Fossil lists are given, and special attention directed to the graptolites which characterise particular zones]. G. M., Dec., pp. 534-541.
- J. M. MELLO. **Derbyshire.**
Handbook to the Geology of Derbyshire, 2nd ed. [giving a general description of the local Geology: the Carboniferous is fully described, with fossil lists, vertical sections of the Coal Measures, and other details; the material of the Bunter Pebble-beds is supposed to be derived from an old ridge to the south; the drift is treated according to Mr. Deeley's views; the Cresswell Caves are described, with a list of 23 mammalia and figures of many]. 12mo., 89 pp., with map and 5 plates; London, 1891.
- W. D. M[ETCALF]. **York Mid W.**
Excursion to Oulton [to inspect a recent boring near the Oulton Brewery: the geology of the district briefly described]. Tr. Leeds G. A., pp. 63-65.
- L. C. MIALL. **York Mid W. and S.W.**
Airedale; Its Scenery, Historic Sites, Geology, and Natural History [described in popular style, with chapters headed 'The Foundations of Yorkshire,' 'Geology of Skipton,' 'Geology of the Country between Skipton and Shipley,' 'The Lower Coal Measures in Airedale,' 'Geology of the Country to the North of Leeds,' and 'Extinct Quadrupeds of Airedale']. Handbook for Leeds and Airedale. Prepared for the use of the British Association, Leeds, 1890, pp. 1-42.
- W. H. MILES. **Cheshire.**
Notes on Supposed 'Footprints' found at Runcorn [in the Keuper; their peculiarities pointed out]. Journ. Liverp. Geol. Assoc., vol. xii. pp. 43-45.
- G. H. MORTON. **Cheshire.**
Subterranean Erosion of the Glacial Drift, a probable cause of Submerged Peat and Forest-beds [combating Mr. Shone's application of this theory to the case of Ince]. G. M., Sep., pp. 430-432.
- CHARLES J. MURTON. **Northumberland and Durham.**
Geology of the Coal Field of Northumberland and Durham [giving numerous sections with a synopsis of the coal-seams of the Upper Carboniferous as given by fourteen collieries, and a correlation of the coal-seams in the Lower Carboniferous in six districts]. Trans. N. Eng. Inst. Min. and Mech. Engin., vol. xlii. pt. iv. Aug., pp. 236-247, pl. xlii.-xlv.

- R. NASSE. Durham, Northumberland.
Economic and Comparative Notices on the Coal Working in Durham and Northumberland [a general account of the Durham coal-field, noting succession of strata, thicknesses, qualities of coal, etc.]. Zeits. Berg. Hütten u. Sal. Wesen. in Preuss., vol. xxxix. p. 282 et seq. ; 1891.
- A. G. NATHORST. York S.E.
Fresh Evidence concerning the Distribution of Arctic Plants during the Glacial Epoch [with mention of the finding of leaves of *Betula nana* in peat-moss at Bridlington, and by Mr. Reid at Holmpton ; woodcut map given]. Nature, Jan. 21st, 1892, vol. 45, p. 275.
- W. HUNT PAINTER. Derbyshire.
Derbyshire Fossils. Nat., Jan., p. 22.
- A. PAVLOW and G. W. LAMPLUGH. York S.E., Lincoln N.
Argiles de Speeton et leurs equivalents [Part 1, by Mr. Lamplugh, gives a full account of the Speeton Clay, its exact succession, detailed measurements, and the characteristic fossils of the several marked horizons ; also a comparison with the Lincolnshire series. Part 2, by Prof. Pavlow, gives precise descriptions of the belemnites and ammonites of Speeton, and compares them with the corresponding forms in Russia and other countries. Part 3 is devoted to correlation of the British with the foreign succession]. Bull. Soc. Imp. des Naturalistes de Moscou for 1891, Nos. 2, 3, 4, pp. 181-213, 455-570; pl. iv-viii. xiii-xviii. Abstr. in G.M., Sep., pp. 422-426, and Nature, July 14, p. 257.
- S. S. PLATT. Lanc. S.
Some of the Recent Results of the Investigations into Local Erratic Blocks. Trans. Rochdale Lit. Sci. Soc., vol. iii. with map.
- J. POSTLETHWAITE. Lake District.
The Cleaved Ashes and Breccias of the Volcanic Series of Borrowdale [with some general account of the series, but in particular describing the distribution of slaty cleavage ; also a note by Prof. Bonney on the microscopic structure of some specimens which are figured]. Trans. Cumb. Westm. Assoc., No. xvi. pp. 41-54, plate and map.
- J. POSTLETHWAITE. Cumberland.
The Dioritic Picrite of White Hause and Great Cockup [two small exposures of hornblendic rock like that of Little Knott]. Q. J. G. S., Nov., pp. 508-513, with map.
- J. R. PRITCHARD. Lanc. S.
The Boulder Clay of the North End of Liverpool [noting especially certain boulders at Linacre, a Liassic ammonite supposed to be from Antrim, from Bootle Docks, a tooth of *Acrodus* in the boulder-clay at Moor Hey, with shell-fragments, blocks of wilhelmite, hemimorphite, hæmatite, etc., a limestone block with serpulæ, and another with molluscan borings]. Journ. Liverp. Geol. Ass., vol. xi. pp. 52-58 ; 1891.
- T. MELLARD READE. Lanc. S.
Sand-Sculpture [at Crosby]. Nat., May, p. 149.
- T. MELLARD READE. Lancashire and Cheshire.
Glacial Geology : Old and New [dealing especially with the basin of the Irish Sea ; describing the glacial accumulations there, and arguing in favour of the submergence as against the 'land-ice' theory]. G. M., July, pp. 310-321.
- T. MELLARD READE. Cheshire, Lanc. S.
The Rounding of Sandstone Grains of the Trias as bearing on the Divisions of the Bunter [with descriptions of numerous samples : the author concludes that neither the crystallisation of the grains nor the presence of pebbles can be considered characteristic of particular horizons in the Bunter : crystalline sandstones are commoner in the Keuper, the material being purer]. Pr. Liv. G. S., pp. 374-386.

- T. MELLARD READE. Lancashire S.
Shapes of Sand Grains [referring to those in the dunes between Crosby and Southport]. G. M., Oct., pp. 478, 479.
- T. MELLARD READE. Cumberland.
Faulting in Drift [seen in a section on the shore near St. Bees, south of Nether-town Station]. G. M., Nov., pp. 490, 491.
- F. R. COOPER REED. York Mid W.
Woodwardian Museum Notes [describing an abnormally formed crinoid (*Platycrinus pileatus* Goldf.), from the Carboniferous Limestone of Bolland]. G. M., Dec., pp. 548, 549.
- CHARLES RICKETTS. Durham.
'Concretions' in Magnesian Limestone [suggesting that these may have originated from actual cavities formerly distended by gases]. G. M., Jan., p. 46.
- C. RICKETTS. York N.W.
Report of the Field Meeting [of the Liverpool Geological Society] at Settle, May 1891 [noticing the coal in the basal Carboniferous Limestone at Beecroft near Horton, the Coniston Limestone at Brackenbottom and Norber, and the perched blocks on Norber Brow]. Pr. Liv. G. S., pp. 453-455.
- R. W. B. ROBERTS. York S.E., N.E.
The Cliff Sections of the Yorkshire Coast [describing generally the strata exposed from Flamborough to Whitby]. Journ. Liverp. Geol. Ass., vol. xi. p. 59 et seq., 1891.
- THOMAS ROBERTS. York N.E., S.E., Lincolnshire.
The Jurassic Rocks of the Neighbourhood of Cambridge [including their correlation with the corresponding strata in the northern counties]. 8vo, pp. vii.+96 [77-80]; Cambridge.
- [G. E.] ROGERS. Isle of Man.
[A curious formation from Cronk Sumark, Sulby]. Yn Lioar Manninagh, April 1892, p. 308.
- H. ROSENBUSCH [translated from]. Cumberland.
Note on the Metamorphosed Skiddaw Slates. Nat., April, pp. 119, 120.
- G. SHARMAN and E. T. NEWTON. Cumberland.
On a new Form of Agelacrinites (*Lepidodiscus Milleri*, n. sp.) from the Lower Carboniferous Limestone of Cumberland [from Waterhead on the river Irthing : character of species described]. Q. J. G. S., May, pp. 150-152, plate ii. Abstract in Ann. and Mag. N. H., Feb. 1892, p. 180.
- JAMES LESLIE SHAW. Cumberland and Furness.
The Hæmatite Ores of Cumberland [describing the mode of occurrence of these rich deposits, which occur in the Carboniferous Limestone and the older rocks, and speculating on their derivation : a map is given and a section of Gilfoot Park Mines]. Trans. N. Engl. Inst. Min. and Mech. Engin., vol. xli. pt. iv. Aug., pp. 196-219, pl. xxxvi.
- W. SHONE. Cheshire.
The Subterranean Erosion of the Glacial Drift, a probable cause of submerged Peat and Forest-beds [illustrated by a section at Upton, Chester]. Q. J. G. S., Feb., pp. 96-103.
- THEODORE SINGTON. Derbyshire.
Notes on the Geology of the Isle of Man. Rep. and Proc. Manch. Sci. Stud. Ass. for 1888 (publ. March 1889), pp. 20-23.
- [THEODORE] SINGTON. Derbyshire.
[Paper on the Mountain Limestone of Derbyshire]. Rep. and Trans. Manch. Sci. Stud. Ass. for 1888 (publ. March 1889), pp. 34-40.

- F. SISSONS. Notts, Derbyshire.
Cresswell Crags [and their bone-caves, with remains of pleistocene mammals]. Sissons' 'Beauties of Sherwood Forest': a Guide to the 'Dukeries and Worksop, 2nd ed., 1888, pp. 107-111.
- WARINGTON W. SMYTH. Isle of Man.
List of [51] Minerals found in the Isle of Man. Trans. Isle of Man N.H.S., vol. i. 1879-84 (publ. 1888), p. 143-7.
- H. SPEIGHT. York Mid W.
The Craven and North-West Yorkshire Highlands [with numerous notes on the physical features and geology of the district]. 8vo, pp. 470, London.
- J. W. STATHER. York N.E.
The Yorkshire Naturalists' Union at Coxwold and Byland [Geology]. Nat., Dec., pp. 353, 354.
- MARK STIRRUP. Lanc. S.
Discovery of a large Boulder at Ardwick [a striated boulder 7 ft. 5 in. long, probably a diabase]. Tr. Manch. G. S., xxii. pt. ii. pp. 53-55.
- M. TAIT. York N.E., S.E., S.W., Mid W., and N.W.
Yorkshire: its Scenes, Lore, and Legends . . . with Contour Maps of River Valleys, Geological Map, large folding Map of the whole County [etc.] . . . by F. D. King [with frequent though slight geological references throughout]. Leeds: E. J. Arnold, Printer and Publisher, 3, Briggate. 1888 [cloth, 100 pages with 10 coloured maps and numerous views of scenery].
- THOMAS TATE [Secretary]. York N.E., S.E.
The Yorkshire Boulder Committee and its Fifth Year's Work. Nat., May, pp. 159-165.
- THOMAS TATE. Lake District.
Lake Country Rocks. Nat., Aug., pp. 237-240.
- THOS. TATE. Lake District.
How to Recognise Lake Country Rocks [abstract only, enumerating the more important types]. Tr. Leeds G. A., pp. 18, 19.
- THOMAS TATE. Durham.
Notes on Recent Borings for Salt and Coal in the Tees District [a boring 1,079½ ft. deep, situated 3 m. W. of Stone Marsh, shows the Upper Keuper Red Marls to be absent as usual, the Salt-rock also absent; the Magnesian Limestone only 299 ft. thick, and apparently resting directly on Yoredale strata]. Q.J.G.S., Aug., pp. 488-495.
- J. E. TAYLOR [not signed]. Derbyshire.
[Colour-bands on Fossil Shells: We have frequently found near Castleton, Derbyshire, specimens of *Terebratula hastata* retaining their original colour-bands]. Sci. Goss., Jan. 1892, p. 19.
- R. H. TIDDEMAN. York Mid W. & S.W.
Carboniferous Rocks in the Upper Aire Valley, and their Physical History [described]. Handbook for Leeds and Airedale. Prepared for the use of the British Association, Leeds, 1890, pp. 43-54.
- R. H. TIDDEMAN. York Mid W.
[Presidential Address to the Craven Naturalists, treating of the conditions of the Craven district in Carboniferous times, and especially describing the speaker's views as to the part played by coral-reefs ('knoll-reefs') in the formation of the Mountain Limestone]. 'Craven Herald,' Jan. 29th.
- C. TOMLINSON. York S.E.
Aerolites: Bolides [one in Yorkshire, 56 lbs., 1796]. Notes and Queries, Oct. 22nd, 1892, p. 321.

- [JAMES TONGE.] Lanc. S.
[Exhibition of specimens of 'Peacock Coal,' and note on its occurrence at Plodder Mine near Hulton]. Tr. Manch. G. S., xxi. part xiii. pp. 321, 362.
- R. H. TRAQUAIR. York S.W. and N.W., Derbyshire.
Further Notes on Carboniferous Selachii [partly based on Yorkshire and Derbyshire material, and criticising Davis's work]. G. M., March 1888; Proc. Roy. Phys. Soc. Edinb., vol. 9, part 3, 1887-1888 (publ. 1888), pp. 421-6.
- J. STANLEY TUTE. York Mid W.
A Permian Conglomerate Bed at Markington [consisting of worn pebbles of Carboniferous Limestone and angular fragments of Magnesian Limestone in a limestone matrix: the section (70 feet exposed) is given]. Pr. Yorks. G.P.S., pt. i. pp. 72, 73.
- EDGAR R. WAITE. York S.E.
Remains of Fallow Deer from Goole Moor. Nat., June, pp. 167-169.
- JOHN FRANCIS WALKER. York N.E.
On Yorkshire Thecidea [recording the *T. ornatum* of Moore as plentiful in the Coral Rag of Ayton near Scarborough]. G. M., Dec., p. 548.
- GEORGE WILD. Lanc. S.
On the Lower Coal Measures of Lancashire: Organic Remains. Sections of Seams, and probable Mode of Formation [with numerous local details, including section at Townhouse Colliery, general section of the Lower Coal Measures, and catalogue of fossils]. Tr. Manch. G. S., xxi. pt. xiii. pp. 364-400, with sections and plates i.-iii. [fossils].
- G. WILD, [M.] STIRRUP, and [R.] CLAY. Lancashire S.
Globular Concretions from the Coal Measures of Lancashire [at Ashton-under-Lyne, Diggle, and Dukinfield]. Tr. Manch. G. S., xxii. pt. ii. pp. 66-61.
- W. C. WILLIAMSON. York S.W., N.E.
[Slab of Carboniferous Limestone from Bolland, illustrating the passage of a foraminiferal ooze into crystalline calcite, and *Astropecten Orion*, Forbes, from the Kelloways Rock, near Pickering]. Q. J. G. S. Proc., pp. 184, 185. Nature, May 19, vol. xlvi. p. 70.
- W. C. WILLIAMSON. Lanc. S., York S.W.
On the Organisation of the Fossil Plants of the Coal-Measures— Part xviii. [describing *Bowmanites dawsoni* from Footmine, near Oldham, and Cinder Hills, near Halifax; and *Rachiopteris ramosa* from the 'Hard Bed,' Halifax]. Phil. Trans. Roy. Soc., vol. 182 B, pp. 255-265, plates xxv.-xxvii.
- WM. CRAWFORD WILLIAMSON. Lanc. S.
The Genus *Sphenophyllum* [discussed]. Nature, Nov. 3rd, 1892, pp. 11-13.
- W. C. WILLIAMSON. Lanc. S.
[The Boulder found in Oxford Road, Manchester; its origin stated]. Rep. and Proc. Manch. Sci. Stud. Ass. for 1888 (publ. March 1889). p. 98.
- G. FREDERICK WRIGHT. Northern Counties.
Theory of an Interglacial Submergence in England [rejected—the author endorses the theory that the masses containing shells at Macclesfield, etc., have been thrust up from the sea-bottom; there is no evidence of more than a local recession of the ice-front in the so-called interglacial period]. Amer. Journ. Sci., Jan. (3), vol. xliii. pp. 1-8.
- G. FREDERICK WRIGHT. Northern Counties.
Man and the Glacial Period [for section dealing specially with the British Isles see entry under Kendall; there are many other references to the British Glacial phenomena, and the evidence of the Cresswell and Victoria caves is used to support the high antiquity of man]. 8vo., pp. xiv. + 385, with maps and woodcuts; London.

NOTE—BOTANY.

Convallaria majalis in Cumberland: a correction.—In my paper on the 'Plants of S.W. Cumberland,' at p. 141 of this volume, please read 'at Stanley Gill' instead of 'at Stock Gill.'—LISTER PETTY, Ulverston, May 19th, 1893.

NOTE—MOLLUSCA.

Limax cinereo-niger in Bilsdale, Yorkshire.—On the 20th inst., while out with some friends on the northern slope of Roppa Plantation, and not far from Rosy Dyke Farm, Bilsdale, at an elevation of about 900 feet, a small example of this rarity, quite black and without stripes or markings, was brought to me by Miss Annie Baker, a little friend of six years of age, who had found it amongst the bilberries and cranberries.—W. DENISON ROEBUCK, Leeds, Aug. 26th, 1893.

NOTE—ORNITHOLOGY.

Redwings killed by the frost.—During the month of severe weather between Dec. 10th, 1892, and Jan. 10th, 1893, the only birds found killed by the frost in the grounds here were two Redwings (*Turdus iliacus* L.) apparently both males. One found dead on Jan. 6th, and the other dying; I failed to resuscitate it, and it died in the evening of the same day. I know what White says about their susceptibility to cold (Selborne Letter, Aug. 1st, 1771), but never saw it exemplified before. Late in December a couple of these birds were seen on the 'rough pastures' above us, whether a pair or the same two of course cannot say.—LISTER PETTY, Ulverston, N. Lancs., May 19th, 1893.

NOTE—MAMMALIA.

Water Shrew at Louth, Lincolnshire.—I captured a Water Shrew (*Crossopus fodiens*), in Monk's Dyke, Louth, on the 16th July. It swam as if to the manner born, and not after the mode of the Common Shrew. I was of opinion that it was what the fen men call the 'blind mouse,' and the specimen on being submitted to competent authority was pronounced to be the Water Shrew. The old book which enables me to identify the *Sorex fodiens* thus describes it:— 'It has a long slender nose, very small eyes hid in the fur, colour of the head and upper parts of the body, black; throat, breast and belly of a light ash colour; beneath the tail a triangular dusky spot; much larger than *Sorex araneus*; length from nose to tail $3\frac{3}{4}$ inches, tail two inches. Long since known in England, but lost till May 1768, when it was discovered in the fens near Revesley Abbey, Lincolnshire; burrows in the banks near water; is called by the fen men the blind mouse.'—A. R. YEOMAN, Louth, 24th July, 1893.

NOTE—COLEOPTERA.

Acanthocinus ædilis at Leeds, Hull, and Newton-le-Willows.—I have this season seen two examples of this fine beetle. The first was found in the spring of this year, perched on a lady's bonnet, in one of the streets of Hunslet, Leeds, and brought to my friend Mr. S. H. Mackie. The second I saw through the instrumentality of my friend Mr. Wm. Howard, of Messrs. McCorquodale & Co. Limited, Leeds, who had received it from Newton-le-Willows. It had been found on the 9th August, by bricksetters, who were pointing an old wall, in the wagon-works of the L. & N.W. Ry. Co., at Earlestown, Lancashire. In picking out the old mortar the beetle walked out. The Company get a quantity of timber from Grimsby, and the place where the beetle occurred was only two or three hundred yards from the timber sheds. For these particulars we are indebted to Mr. John Owen, of Earlestown. Mr. Baker informs me that a couple of examples have lately occurred at Hull, one of them being in the possession of the Rev. A. Thornley, M.A., F.E.S., of South Leverton.—W. DENISON ROEBUCK, Leeds, Aug. 10th, 1893.

GEOLOGY AND NATURAL HISTORY OF NOTTINGHAMSHIRE.

Nottingham Meeting, 1893. | [Woodcut, arms] | **A Contribution** | to the | **Geology and Natural History** | of **Nottinghamshire**. | Edited by | **J. W. Carr**, M.A., F.G.S., | [three lines of titles]. | — | Price Two Shillings Net. | — | Nottingham : | James Bell, Carlton Street. | 1893.

In this opportunely published book, which is bound in paper boards and extends to about a hundred pages, we have an excellent summary, with lists, of the geology and natural history of Nottinghamshire, and no more useful handbook could have been prepared for such members of the Association as are sufficiently curious as to wish to learn what they can of the county which they are visiting. In the preparation of this book Mr. Carr has been ably assisted by other workers. He is himself responsible for the geological chapter, with the assistance of Mr. James Shipman, F.G.S., and the Rev. J. Magens Mello, M.A., F.G.S., the latter of whom supplies the account of the Cresswell Bone-Caves and the remains they have yielded. Mr. Carr is also the writer of such faunal lists as he has not placed in the hands of specialists. His list of mammalia includes about 30 species, of one of which (*Rhinolophus ferrum-equinum*) we confess we should like to have confirmatory evidence. Full particulars are given of the various species of mammals, as well as of the reptiles, amphibians and fishes. Mr. F. B. Whitlock has furnished the admirable list of birds, for each of which its faunistic position and relative commonness or rarity are stated. In entomology the only order treated of is Lepidoptera, of which the species are enumerated, with a few references and items of information. The list of mollusca is from the pen of Mr. B. Sturges Dodd, who gives 109 species and numerous varieties, with plentiful indications of locality, the group having been well worked by the many excellent conchologists on which Nottingham has been able to pride itself. A list of 12 earthworms is given on the authority of Rev. Hilderic Friend, F.L.S. The flora is not treated in extenso, as could have been wished, but is the subject of a summary by Mr. H. Fisher, who gives numerous notes on the most interesting species, the additions to previously published lists, a long list of aliens, and enumerations of the mosses, hepatics, lichens, and fungi known to occur. A useful appendix by Mr. Shipman and Mr. Carr gives a partial bibliography of the principal works and papers on the geology of Nottinghamshire.

Altogether the work is well done, well printed, and calculated to be of great use, not merely in connection with the immediate occasion of its production, but also to all future investigators, and Mr. Carr is to be heartily congratulated upon the excellence of his work.—W. D. R.

NOTES AND NEWS.

Mr. Lister Petty, Ulverston, Lancashire, would be obliged to those who have botanised in North Lancashire, and *printed* their lists in the *Transactions* or *Proceedings* of local Natural History Societies, if they would kindly communicate the reference to him, or still better a copy of the papers. So many people have botanised between the Winster, the Brathay, and the Duddon, that probably such lists are in existence, and are very difficult to trace. References to newspaper articles not desired.



Death has been busy this year among the naturalists of our northern counties, and the obituary list is a long one.



Cheshire has also to mourn the loss of Mr. G. W. Shrubsole, of Chester, one of the founders and most valued members of the Chester Society of Natural Science, and a good worker among the mollusca and some lower forms of animal life.



Many will learn with regret of the death, in his 80th year, of the Rev. H. H. Higgins, M.A., of Liverpool. Mr. Higgins was the author of numerous books and papers in Natural History. He founded, in 1860, the Liverpool Naturalists' Field Club, and has also been President of the Microscopical and the Literary and Philosophical Societies of the same city.



We record, with regret, the death of a well-known Yorkshire naturalist and geologist, Mr. George Robert Vine, of Sheffield. Almost entirely self-educated, Mr. Vine has long devoted himself to research in the field and with the microscope, and, in particular, has become a high authority on recent and fossil Polyzoa. Readers of 'The Naturalist' will remember his series of articles some years ago on the 'Micro-palæontology of the Northern Carboniferous Shales,' and other papers in more recent volumes.



By the decease of the Mayor of Halifax (Mr. James Wm. Davis, F.S.A., F.L.S., etc.), Yorkshire loses a geologist who has done no small share of scientific work in spite of the claims upon his time by commercial and municipal engagements. He will long be remembered by the volume upon 'West Yorkshire,' which appeared in 1878 from the pens of himself and Mr. F. Arnold Lees. His loss will be particularly felt by the Yorkshire Geological and Polytechnic Society, to which he became Honorary Secretary at a time of depression in the Society's affairs.



The death of Mr. George Brook, F.L.S., which took place at Allandale, Northumberland, on the 12th of August, was very sudden, as he had during the day been shooting in his best form, and was particularly well in health. His age was thirty-six, and he was a native of Huddersfield. He took a leading part in the reorganisation of the Yorkshire Naturalists' Union in 1876, and in its work, as one of its honorary secretaries for some years afterwards. He afterwards devoted himself to Embryology, particularly of fishes, and became Lecturer in Comparative Embryology at the University of Edinburgh. Later still, he turned his attention to the study of corals, was the author of one of the 'Challenger' memoirs, and only this year of a British Museum Catalogue of Madreporarian Corals. As a coming man in this department, science suffers much by his untimely decease.



We have to deplore the death of Mr. Robert Holland, of Frodsham, Cheshire, which took place last June. He was consulting botanist and examiner of seeds for the Cheshire Agricultural Society. He was a sound botanist, and an authority on the folk-lore of his county. He will ever be remembered for the 'Dictionary of English Plant Names,' written in conjunction with Mr. James Britten, and for his 'Glossary of Words used in the County of Chester,' a veritable storehouse of information on the customs, popular rhymes and proverbs, legends and folk-lore of Cheshire.

YORKSHIRE NATURALISTS AT ASKERN.

A DEPARTURE was made from the usual custom whereby the Yorkshire Naturalists' Union makes it a rule not to visit the same locality twice for an excursion, when Askern was selected for the 103rd of the series, on Thursday, the 15th of June. There was, however, a sufficient reason in the fact that in 1886 all the low-lying country about Askern was flooded for many miles to such an extent as to entirely prevent the work in micro-zoology and micro-botany which it had been confidently expected to be done. In this respect there could not have been a more complete contrast, for on the 15th of June this year the country had suffered so long from drought that many ponds and water-courses were dried up, so that while on the former occasion access could not be had to them by reason of the super-abundance of water, on this access was difficult by reason of the stretches of soft mud which surrounded the ponds.

The arrangements for investigating the district included three main lines of route, and in making them the Secretaries had been heartily supported by the members of the neighbouring societies of Doncaster, Barnsley, and Ackworth School. The Doncaster members were well to the front in providing leaders for the parties, while the Barnsley Society made special driving arrangements for joining in the day's work. It was, moreover, particularly gratifying to have so strong a muster of the juvenile naturalists of Ackworth Friends' School as made their appearance in charge of two of their masters, Mr. Neale and Mr. C. J. Evans. Permission had been granted for their estates to be visited by Messrs. F. Bacon Frank, of Campsall; G. B. C. Yarborough, of Camps Mount; Percy S. Neville, of Shelbrook Park; and G. Charlesworth, of Skellow Grange; Mr. Frank showing further interest by meeting the party which visited Campsall, and facilitating their researches in every possible way.

All parties started from Askern Station at 10.30 a.m. A strong contingent, led by the Rev. F. H. Allen, Vicar of the neighbouring parish of Moss, and afterwards joined by Mr. M. H. Stiles, of Doncaster, proceeded direct to the prolific brick-pond at Thorpe, from which they returned by way of the Shirley pool and jungle, the Haywood and Wrang Car drains, and Askern Pool, collecting as they returned. The second party was to have been under the guidance of Messrs. J. M. Kirk and George Winter, both of Doncaster, but these gentlemen having been detained, the party moved off in charge of Mr. Claude Leatham, Mr. Kirk catching up with it later on. Its operations were directed to the exploration of the woods, ponds, and drains at Campsall, in which Mr. Frank

gave valuable help. The members of this party then took up the line appointed for a third one, and investigated the woods at Burghwallis and Owston, returning thence to Askern. What should have been the third party did not start, as its leader, Mr. H. H. Corbett, of Doncaster, was detained unexpectedly by professional duties. The weather was oppressively sultry and trying to most of the members, and had had considerable adverse effect on the collecting-grounds, the whole country being very dry.

All parties converged on the Swan Hotel at Askern, where tea was partaken of. The sectional meetings were, however, first held, tea not being ready at the time appointed, in consequence of a misunderstanding as to the hour. However, the general meeting was held at the time appointed, the bowling-green affording a suitable place on so fine a day. The chair was occupied by the Rev. William Fowler, M.A., Vicar of Liversedge, an ex-president, Mr. Leonard Hawkesworth acting as hon. secretary, in the unavoidable absence of Mr. Baker. The Societies represented were those at Barnsley, Wakefield, Elland, Bradford (Nat. Soc.), Leeds (four societies), Goole, Dewsbury, Halifax, Doncaster, Ackworth, Hull (two societies), Huddersfield, Scarborough, Sheffield, and Liversedge, and the total individual attendance was about 60 or 70. Three new members of the Union were elected, viz., Miss L. W. Stephenson, of Harrogate; Mr. John Newton Coombe, of Sheffield; and Mr. Claude Leatham, of Wentbridge. On the motion of Mr. James Bedford (Leeds) the best thanks of the Union were voted to the gentlemen who had given leave for their estates to be visited, to the leaders of parties, and to the contributors to the excursion-programme, after which the sectional reports were called for.

For the Conchological Section the report was prepared by its Secretaries, Messrs. Wm. Nelson (Leeds) and F. W. Fierke (Hull), but as they had to leave before the Section was called upon, Mr. W. Denison Roebuck, F.L.S., gave a brief résumé of the observations made.

Mr. Fierke's report is as follows:—The excursion, so far as the conchologists were concerned, presented a remarkable contrast to the conditions under which the previous one at Askern was held. In 1887 the country was flooded; this year the drought had nearly dried everything up, and the district, in common with other parts of the country, made a poor hunting ground for conchologists for either land or freshwater mollusca, although, as regards the latter, the dykes compared favourably with other districts, as some of them are supplied from larger

sheets of water. At Shirley Pool in particular the edge of the water was in many places out of reach of collectors, an expanse of soft mud intervening between it and terra firma. On the whole it was perfectly evident there was not much to choose between the 1887 and 1893 excursions. On the present occasion the Section was fairly well represented, as, in addition to its two hon. secretaries, the party included Mr. W. Denison Roebuck, F.L.S., Mr. W. Rushforth, and Mr. J. E. Crowther. Mr. Roebuck selected the route to Campsall Woods, and the others proceeded along Askern Pool to Shirley Pool and Jungle, under the guidance of Mr. W. Nelson, who had previous knowledge of the district. The dyke running off Askern Pool had been specially noticed for its albino varieties, but even with the aid of Mr. Nelson, who has collected them in bygone years, not the slightest indication was seen to be exhibited in any of the specimens of *Limnæa peregra* or *Limnæa palustris*, which were all very eagerly examined in hopeful anticipation of meeting with this interesting variety. At the end of the path we turned into the field which had been mentioned as containing some important lacustrine remains and an examination of the mole-heaps, which are very numerous, resulted in the discovery of *Viviparus contectus*, a species supposed to have become extinct in the district. A few moments' attention was enough to convince the party that *Viviparus* had once been very common and that by its numbers and surroundings it might still survive in the neighbourhood. Of this, however, we were not able to satisfy ourselves. The drain fronting the field had been cleaned out and its rejectamenta did not reveal the remains of this species, although many common species were well represented. It is true an old shell was taken out of the drain, but it did not seem to be proof that it had not been dropped into the water, as on the ground only a few yards off numerous loose specimens were deposited. There can be little doubt that excessive cleaning of the drains and dykes is inimical to the well-being and propagation of the species, and that as districts in which it is known to occur become more and more cultivated the less likelihood will there be of its continuing a member of their fauna. As we were not satisfied that the shell had been ejected from the drain we proceeded to carefully examine the soil in the field. These operations soon gave us ample evidence of the existence at one time of an extensive marsh or lake, in which a good variety of mollusca had lived. In fact several good sections were procured with shells scattered through the peaty clay and marl in situ corresponding exactly to the lacustrine deposits exposed in the cliffs of the Holderness coast. One or two sections were exceedingly

marly in character, and contained numerous opercula of *Bythinia tentaculata*. Moles were doubtless responsible for the exposure of the shells on the surface, as the soil was thrown up during the carrying on of their subterranean operations. In order to prove that these little mounds were not the only depositories of the shells we excavated away from them about a foot deep and again met with shell remains. This seemed conclusive evidence of the lacustrine character of the district and that the shells to be found on the surface had been really conveyed through the agency of the moles from these deposits. *Planorbis vortex*, *P. umbilicatus*, *P. corneus*, *P. contortus*, *Limnæa peregra*, *L. stagnalis*, *L. palustris*, *Bythinia tentaculata* and *Valvata cristata* are species of mollusca still common all over the district, whilst *Viviparus*, as far as we know, is not known at present to occur anywhere in the district. At the same time it would not be wise to be dogmatic on this point, as from the fact that the remains of the shell are so common there is a high degree of probability that it may have survived in some of the dykes. In addition to the shells we have named, a specimen of *Planorbis fontanus* (Lightfoot) was obtained, which Mr. Nelson informed the party had not been to his knowledge previously recorded from the deposit.

The remainder of the time was spent at Shirley Pool and the Jungle. Very little was seen of the terrestrial mollusca, whilst odd examples of aquatic species could be seen in the jungle some distance from the water, apparently where they had been left as the banks became dried up. Such species as *Limnæa palustris* were even taken in the middle of the jungle, which evidently, in rainy seasons, must become entirely inundated. A very interesting banded form of the last named species was collected by Mr. Crowther. Six white parallel lines passed most distinctly round the body whorl. The following is a complete list of the mollusca noted during the day:—*Arion ater* var. *brunnea* (W.D.R.), *Hyalinia alliaria*, *H. nitidula*, *H. nitida*, *Helix rotundata*, *H. aspersa*, *H. nemoralis*, *H. cantiana*, *H. hispida*, *Cochlicopa lubrica*, *Succinea putris*, *Carychium minimum*, *Planorbis fontanus*, *Planorbis nautilus* (pond near Burghwallis, W. D. R.), *P. vortex*, *P. carinatus*, *P. umbilicatus*, *P. corneus*, *P. contortus*, *Physa fontinalis*, *Limnæa peregra*, *L. stagnalis*, *L. palustris*, *Velletia lacustris* (Shirley Pool), *Bythinia tentaculata*, *B. leachii*, *Valvata piscinalis*, *V. cristata*, *Sphærium corneum*, *Pisidium fontinale*, and *P. pusillum*.

For the Entomological Section, in the absence of all its officers, reports were given by Mr. H. H. Corbett, M.R.C.S., of Doncaster, and Mr. Joseph Coe, of Hull.

Mr. Corbett writes that the Lepidoptera taken were without interest, *Lycæna alexis*, *Anthocharis cardamines*, and *Euclidia mi* being the most noteworthy species recorded.

Mr. Joseph Coe writes of the Coleoptera as follows:—On alighting from the train at Askern station we were met with a good omen for a successful day, by immediately coming across *Carabus violaceus* on the station platform, and notwithstanding the fact that June is one of the least exciting months of the year for the coleopterist, and also taking into consideration the very dry season, the fortune met with was fairly good. Many of the beetles in the appended list, however, were single specimens and there were few examples of abundance.

The route taken was the one from Askern Pool to Shirley Pool and Jungle. Askern Pool appeared to be destitute of entomological life and did not occupy much time, but the drain leading from it yielded well. Here the gaudily marked 'harlequin' beetle, *Prasocuris phellandrii* was found to be in great numbers upon the leaves of the brooklime (*Veronica beccabunga*); *Ilybius ater*, *Platambus maculatus*, and *Deronectes assimilis* were also among the captures.

Overturning stones and logs of wood en route,—usually a fruitful method of search,—was of little avail, the very beautiful although very common *Anchomenus dorsalis* and *Pterostichus niger* being the only species noted. Sweeping the very abundant herbage was more encouraging, several species of *Telephorus*, or 'harvest bugs' as they are sometimes popularly called, three species of *Apion* and the twenty-two spotted lady-bird, *Coccinella 22-punctata*, being among those taken.

The search for stercoraceous species in the pastures about Shirley was, for want of time, much shorter than we should have wished, as the ground gave promise of being productive; *Aphodii* were turned up in fair variety and *Geotrupes stercorarius* was dug from a depth of quite twelve inches.

The first noticeable feature upon arriving at Shirley Pool was the abundance of that moisture-loving beetle, *Elaphrus cupreus*, on the banks. The water-net next became the *modus operandi*, but the results did not nearly come up to the expectations roused by the promising aspect of the water. Work was only possible at the 'landslip' end, owing to the treacherous nature of the ground at the borders in other parts; *Agabus nebulosus* with its beautifully polished tortoiseshell elytra was one of the earlier captures and the very similar and closely allied *Agabus conspersus* came to view shortly afterwards.

Investigations in the Jungle were somewhat disappointing, but *Scaphidium quadrimaculatum* came as a reward just before leaving.

The following list includes the species noted by Mr. Bayford, who did not reach Askern till late in the day, and also those by the coleopterists among the Ackworth School boys.

- | | |
|------------------------------|--------------------------------|
| Carabus violaceus L. | Helophorus brevipalpis Bed. |
| Elaphrus cupreus Duft. | Helophorus nubilus F. |
| Elaphrus riparius L. | Anacæna globula Payk. |
| Loricera pilicornis F. | Philhydrus testaceus F. |
| Notiophilus biguttatus F. | Sphæridium scarabæoides L. |
| Leistus ferrugineus L. | Cercyon hæmorrhoidalis F. |
| Stomis pumicatus Panz. | Cercyon unipunctatus L. |
| Nebria brevicollis F. | Necrophorus humator F. |
| Nebria gyllenhalii Sch. | Silpha rugosa L. |
| Clivina fossor L. | Colon brunneum Latr. |
| Bembidium monticola Sturm. | Stenus pubescens Steph. |
| Bembidium litorale Ol. | Tachyporus obtusus L. |
| Pterostichus niger Sch. | Tachyporus chrysomelinus L. |
| Pterostichus madidus F. | Tachyporus hypnorum F. |
| Pterostichus vulgaris L. | Philonthus æneus Rossi. |
| Calathus melanocephalus L. | Coccinella 22-punctata L. |
| Anchomenus dorsalis Müll. | Scaphidium quadrimaculatum Ol. |
| Anchomenus albipes F. | Aphodius fossor L. |
| Anchomenus angusticollis F. | Aphodius hæmorrhoidalis L. |
| Anchomenus oblongus F. | Aphodius fimetarius L. |
| Dyschirius globosus Hbst. | Aphodius ater DeG. |
| Haliplus fulvus F. | Aphodius rufescens F. |
| Haliplus ruficollis DeG. | Aphodius contaminatus Herbst. |
| Haliplus confinis Steph. | Aphodius luridus F. |
| Laccophilus obscurus Pz. | Athöus hæmorrhoidalis F. |
| Deronectes 12-pustulatus Ol. | Hydrothassa marginella L. |
| Deronectes assimilis Payk. | Agriotes sputator L. |
| Deronectes depressus F. | Telephorus lividus L. |
| Hydroporus palustris L. | Telephorus pellucidus F. |
| Cœlambus versicolor Sch. | Telephorus lituratus Fall. |
| Cœlambus inæqualis F. | Malthodes marginatus Latr. |
| Colymbetes fuscus L. | Malachius bipustulatus L. |
| Agabus bipustulatus L. | Chrysomela distinguenda Steph. |
| Agabus guttatus Payk. | Prasocuris phellandrii L. |
| Agabus nebulosus Forst. | Crepidodera ferruginea Scop. |
| Agabus conspersus Marsh. | Apion trifolii L. |
| Platambus maculatus L. | Apion violaceum Kirby. |
| Ilybius ater DeG. | Apion apricans Hbst. |
| Ilybius fuliginosus F. | Phyllobius oblongus L. |
| Gyrinus natator Scop. | Phyllobius urticæ DeG. |
| Gyrinus minutus F. | Otiorrhynchus rugifrons Gyll. |
| Hydrobius fuscipes L. | Sitones lineatus L. |
| Helophorus aquaticus L. | |

For the Botanical Section reports were given by Mr. A. H. Pawson (Leeds), Secretary for Phanerogamic Botany, and by Mr. Charles Crossland (Halifax), Secretary for Mycology.

Mr. Pawson remarked that the botanists of the party at once turned their eyes to the pools and the marshes, for in this low-lying land these were to them the region of promise. They meant no disrespect to the dry land in this case. Magnesian limestone is a soil of which the plant-lover never thinks without rapture, but here there are no exposures of it in cliffs and crags such as delight his eyes about Thorparch and Knaresborough. The natural rock is almost entirely hidden by drift and alluvium which have left a flat surface, admirably adapted for agriculture, and so thoroughly is it utilised for that purpose that the territories of the wild children of the plain have been sadly abridged. The hedge-banks and an occasional bit of tangle alone remain to them. Their cousins of the marshes, however, are happier in having contented themselves with land of no economic value, and they are left to possess it in peace. Nay, the operations of the agriculturist have been even favourable to these water-plants. He must perforce leave to them their marshes, and, in draining his other lands, he has provided them with numerous ditches of varying depths (which by a periodical cleansing he keeps free from the coarser growths which would soon entirely choke them) in whose silent and almost stagnant waters the Maretail, the Bladderworts, the Batrachian *Ranunculi*, and the Water Violet find exactly the place which suits them best, and flourish undisturbed by the too boisterous and jostling company of the great Reeds, the Bulrushes, and the giant Sedges which lord it over the marsh.

It was by fields and bye-paths that members made their way to Shirley Pool and its adjacent marshy jungle, noting on the way *Hippuris vulgaris* in fine flower and *Rhamnus catharticus* and the less frequent *R. frangula*, trees usually of different levels, growing side by side. The great dryness of the season gave an unusually good opportunity of working the marshes. Overtopped by the tall Reeds, one was able to penetrate into the domain of the frogs and the fishes with almost dry feet, and to handle and examine growing plants which it is usually very difficult to approach. The time of the year was too early for the full glory of the Bulrushes and the great Loose-strifes, but the Sedges and Flags were superb, and the rare sight of a mass of that splendid Buttercup, *Ranunculus lingua*, with flowers expanded to the utmost in the hot sunshine, like chalices of enamelled gold, repaid the botanists for all their journey. *Thalictrum flavum*, too, grows and flowers here like beds of Meadow Sweet, and

the Marsh Buckler Fern everywhere drapes the feet of the green Flags and tasselled Sedges with the delicate lace-work of its fronds. It was a ramble to be long remembered. The more noteworthy plants of the day's work were *Ranunculus lingua*, *R. tricophyllus*, *R. circinatus*, *Thalictrum flavum*, *Picris echioides*, *Hottonia palustris*, *Genista tinctoria*, *Parnassia palustris*, *Rhamnus frangula*, *R. catharticus*, *Habenaria chlorantha*, *Cladium mariscus*, *Calamagrostis lanceolata*, *Hippuris vulgaris*, and *Lastræa thelypteris*. In a bog near the village *Ænanthe lachenalii* was found of so rich a growth that it was at first taken for *Æ. pimpinelloides*.

The only cryptogams reported upon were the Fungi, concerning which Mr. Charles Crossland remarked that on account of the dry weather fungi were rather scarce, very few—not more than two—agarics being seen, viz., *Pluteus cervinus* and *Stropharia semiglobatus*, which, with *Poria versicolor*, *Dædalea unicolor*, and *Stereum hirsutum* included all the Hymenomycetes met with. Of the Gastromycetes, *Sphærobolus stellatus* was noted, while *Lycoperdon epidendron* and *Reticularia umbrina* were the only Myxomycetes. The majority of the species collected were microscopic. Many of them could not be named at sight, but had to be stored away for future and closer examination. Though the day was very hot, with a tropical sun at full glare, Mr. H. T. Soppitt was indefatigable in his search after these minute species, and with a view of making most of the day he and the writer started early and broke the journey at Knottingley. Here was found very sparingly the æcidiospores of *Uromyces polygoni* Pers. on *Polygonum aviculare*; *Perisporium vulgare* Corda on dead cabbage-stalks; *Peronospora affinis* Rossm. on *Fumaria officinalis*; and *Cladosporium brachomium* B. & Br. on *Fumaria* with the preceding species.

In the Askern district attention was mostly devoted to the jungle and fields adjoining Shirley Pool. The jungle will be a prolific hunting-ground for fungi later in the season. *Reticularia lycoperdon* Rost. was noticed. Of course the very common *Mollisia cinerea* (Batsch) was there; also *M. atro-cinerea* Cooke, *Lachnea scutellata* (L.), *Lachnella apala* B. & Br., *Nectria mammoides* Plowright, *Sphærella rumicis* Desm., *Peronospora effusa* Rabenh. on *Atriplex patula*, *Polyactis fascicularis* Corda, *Penicillium crustaceum* Fr. var. *coremium* on rabbit's dung, and *Ægerita candidas* on wood. Species found belonging to the Uredineæ were *Uromyces poæ* Rabh., *Puccinia coronata* Corda, æcidiospores on *Rhamnus*, *P. poarum* Niel, *P. caricis* (Schum.), æcidiospores on *Urtica dioica*, teleutospores on *Carex*, *P. phragmites* (Schum.), æcidiospores on *Rumex*, and *Uredo* teleutospores on *Phragmites communis*, and *P. persistens*,

æcidiospores on *Thalictrum flavum*. The latter is rather a rare *Puccinia*, and was first found in Yorkshire at Goole, by Mr. Birks, in June 1884. Since the meeting, Mr. Bunker, of Goole, has kindly forwarded additional specimens from that district, where it appears to be plentiful. There was very little of it at Shirley Pool Jungle, only one plant affected by it being seen. *P. suaveolens* Pers. on *Carduus arvensis*, *Puccinia bullata* Pers. on *Conium maculatum*, and *Triphragmium ulmaricæ* (Schum.) on *Spiræa ulmaria* were also met with. *Ustilago segetum* (Bull.) on barley was the only representative of the Ustilagineæ. For obvious reasons it was not possible to give a list at the meeting.

For the Geological Section the report at the meeting was given by Mr. Percy F. Kendall, F.G.S., and the following account is from the pen of Mr. J. W. Stather, F.G.S., of Hull, one of the Secretaries of the Section :

The geologists first visited the large gravel-pit to the S.W. of the village, where the so-called Estuarine Beds are seen. This series of beds had been altered a good deal by the progress of recent excavation, and consists now of (1) a bed of soft sandstone with lines of marly inclusions, the whole dipping steadily to the eastward. This bed was traversed by several faults which did not, however, affect the overlying beds. (2) A great thickness of coarse gravel with intercalations of sand. The stones in the gravel were exclusively Magnesian Limestone, rounded, sub-angular, or quite sharp, and ranged in size from small pebbles to blocks three feet in diameter. This bed rested upon an eroded, stepped surface of No. 1. No false-bedding was observed in the gravels or in the underlying sandstone. Prof. P. F. Kendall, who accompanied the party, expressed the opinion that the sandstone was probably of Permian age, and that the gravels were produced by the action of streams flowing over the Magnesian Limestone, during the Glacial period, when all porous rocks would be rendered impervious by being permanently frozen at a little distance from the surface. Under such circumstances the summer rains, and more especially the melting of snow in the spring, would give rise to great rushes of water down the valleys, sweeping before them all the fragments of rock lying loose upon the surface. Along the eastern edge of the Magnesian Limestone, where it falls away beneath the Alluvial deposits of the Don valley, such streams would probably drop their loads somewhat suddenly when they met the large body of relatively still water that seems to have occupied the area during Glacial times. Such an explanation, Mr. Kendall said, had been offered of the origin of the Coombe-rock of Sussex, by Mr. Clement Reid, of H.M. Geological Survey.

The party next proceeded via Sutton, seeing on the way an example of false-bedding in the Upper Magnesian Limestone, to Campsall, where a gravel and sand pit was visited showing features similar to those exhibited at Askern. The gravels differed, however, in containing, besides Magnesian Limestone, pebbles of quartz and of a coarse red sandstone. The sandstone underlying this series was found to contain similar quartz pebbles, and in an adjacent builders' yard the sandstone was hard and identical in appearance with that of the gravels. The party returned to Askern via a limestone quarry to the north of the village, where obscure traces of fossils were found.

For obvious reasons no report on the microscopic forms of life could be given at the meeting, but afterwards the finds made by the microscopists were worked up, and Mr. M. H. Stiles has furnished the following report on behalf of the investigators of pond- and ditch-life, as made out by Mr. J. Newton Coombe and himself. The more noticeable finds were *Meridion* at Wrancar drain, *Docidium* in the railway pond on the Doncaster Road, and *Volvox* and *Stephanoceros* at Thorpe brick-pond. On the Campsall side Mr. Kirk found nothing worth recording.

Volvox globator (Thorpe).
Cosmarium botrytis.
Cosmarium margaritifera.
Closterium acerosum.
Closterium costatum.
Closterium lineatum.
Closterium lunula.
Closterium striolatum.
Docidium sp.
Pediastrum boryanum.
Scenedesmus quadricauda.
Amphora ovalis.
Asterionella formosa.
Cocconeis placentula.
Cocconema cistula.
Cocconema lanceolatum.
Cyclotella kutzingiana.
Cymbella cuspidata.
Cymbella ehrenbergii.
Cymatopleura elliptica.
Cymatopleura solea.
Diatoma vulgare.
Diatoma elongatum.
Diadesmis confervacea.
Epithemia turgida.
Frustulia saxonica.
Fragilaria capucina.

Gomphonema acuminatum.
Gomphonema capitatum.
Gomphonema constrictum.
Gomphonema olivaceum.
Meridion circulare.
Melosira varians.
Navicula affinis (?).
Navicula amphisbœna.
Navicula angustata.
Navicula gibberula.
Navicula inflata.
Nitzschia sigmoidea.
Pleurosigma attenuatum.
Pleurosigma spencerii.
Pinnularia gracilis.
Pinnularia radiosa.
Pinnularia viridis.
Pinnularia viridula.
Synedra radians.
Synedra ulna.
Stauroneis phœnicenteron.
Surirella minuta.
Actinophrys sol.
Arcella vulgaris.
Vorticella nebulifera.
Dileptus folium.
Stentor mulleri.

Rotifer vulgaris.

Stephanoceros eichornii (Thorpe).

Monostyla quadridentata.

Hydra viridis.

Hydra vulgaris.

Canthocamptus minutus.

Cyclops quadricornis.

Daphnia pulex.

The Vertebrate Section was fairly well represented. Among the members present being the President, Mr. J. Gerrard, one of the Hon. Secs., Mr. R. Fortune, by whom this report is presented, Mr. T. Bunker, and others. The party was considerably strengthened by a detachment of boys from Ackworth School.

Owing to some unfortunate circumstance the guides allotted to this section were conspicuous only by their absence, the result being that the party, without a leader, wandered over the country side, getting to every place but the one they endeavoured to reach; the natives evidently not knowing the places mentioned in the circular.

In spite of the misfortunes which dogged the steps of the members all day, a fairly good list was forthcoming at the end. The find of the day was a nest and eggs of the Reed Warbler, discovered by one of the members of the entomological section. It was also gratifying to see Goldfinches in the district. The total number of species noted was 59, made up as follows: Mammals, 7; Birds, 46; Fishes, 4; Reptile, 1; Amphibian, 1. Following is a detailed list, an asterisk denoting that eggs, and a dagger that young birds were found.

Mammals.	Cole Tit. †	Jackdaw.
Mole.	Marsh Tit.	Rook.
Common Shrew.	Blue Tit.	Swift.
Squirrel.	Wren.	Cuckoo.
Common Field Vole.	Pied Wagtail.	Mute Swan. *
Red Field Vole.	Tree Pipit.	Ring Dove.
Hare.	Spotted Flycatcher.	Stock Dove.
Rabbit.	Swallow. †	Pheasant. †
	Martin.	Partridge. †
Birds.	Sand Martin. *	Waterhen. †
Thrush.	Creeper.	Lapwing.
Blackbird.	Goldfinch.	Snipe.
Whinchat.	Greenfinch.	Fishes.
Whitethroat. †	Sparrow.	Roach.
Lesser Whitethroat.	Chaffinch.	Perch.
Garden Warbler.	Linnet.	Pike.
Willow Warbler.	Bullfinch. †	Reptile.
Wood Warbler.	Common Bunting.	Smooth Newt.
Reed Warbler. *	Yellow-hammer. †	Amphibian.
Sedge Warbler.	Reed Bunting. *	Frog.
Hedge Sparrow.	Skylark.	
Great Tit.	Starling. †	

At the close of the meeting a cordial vote of thanks to the Chairman was passed, on the motion of Mr. E. W. Thirkell, of Stairfoot, near Barnsley.—W.D.R.

BRITISH JURASSIC GASTEROPODS.

A Catalogue of the British Jurassic Gasteropoda, comprising the Genera and Species hitherto described, with references to their Geological Distribution and to the Localities in which they have been found. By W. H. Hudleston, M.A., F.R.S., P.G.S., and Edward Wilson, F.G.S. 8vo, pp. xxxiii. + 147; London, 1892.

The scope of this work is sufficiently described by the full title quoted, with the further remark that the catalogue is a critical one and compiled by two of the foremost living authorities. Mr. Hudleston, an ex-President of the Yorkshire Naturalists' Union, is already well known to our readers. Some of his best known work has been done among the Oolites of Yorkshire and other parts of England, and his monograph on the Gasteropoda in course of publication by the Palæontographical Society is sufficient to establish his lasting authority on this branch of Palæontology. His coadjutor, Mr. Wilson, has long been known for his work among the Liassic mollusca.

The work now under notice includes in all a thousand species, besides fifteen from the Rhætic, given in an appendix. The rapid progress of British palæontology may be gauged by comparing this book with Morris's 'Catalogue of British Fossils' (1854), dealing with the whole fossil fauna of our islands. The work of recording and critically valuing the many species constituted in modern memoirs has become a task not for one man, however able, but for specialists in the several groups, and the present instalment is a worthy contribution to the work.

The practical value of such a catalogue to the working geologist depends upon its completeness, and here there seems to be nothing left to desire. The Yorkshire collector, for example, will find here every species as yet recorded from the Lias of the coast, from the well-known fossiliferous beds of Blea Wyke, Cloughton Wyke, and Scarborough, the various horizons in the Corallian, etc., with references to the original descriptions and figures. If he desires to follow out the history of a species, he will find all the requisite bibliographical particulars—original authorities, synonyms, etc., including references to foreign authors. The work as a whole is one of which British geologists may be proud, and our thanks are due to the authors for the unsparing labour which they have bestowed to render it perfect.—A. H.

NOTE—DIPTERA.

Diptera at Aysgarth.—Mr. Roebuck collected several specimens of a fly in Bear Park West Plantation, on May 22nd last, which I am able to identify as *Rhingia rostrata* L., which is not an uncommon species, being easily recognised by the conspicuous 'beak' in front of the head. I should be very pleased if my friends could send me any Yorkshire flies they may happen to come across.—
PERCY H. GRIMSHAW, Museum of Science and Art, Edinburgh, June 26th, 1893.

Naturalist,

A NEW SPECIES OF LUMBRICUS.

REV. HILDERIC FRIEND, F.L.S.,

Author of 'Flowers and Flower-Lore,' Cockermouth.

ON the 10th June, last year, I received a series of earthworms from Dr. Scharff which contained a fine specimen of Lumbricus whose characters appeared to me to be striking. It was collected in Dublin, and I was puzzled at the time to decide whether it was simply an abnormal form of the common earthworm (*Lumbricus terrestris* L.), or whether it belonged to a distinct species. I therefore made a note of its peculiarities, and awaited an opportunity for coming to a decision on sufficient evidence. In due course the much wished for data were at hand, for on November 16th I received from Mr. Redding, L.R.C.S., a second specimen, taken at Glasnevin, exactly corresponding in every detail to the one already observed. Careful and repeated examination of these specimens, both internally and externally, and detailed comparison with the type of the genus, have enabled me to decide that we have here an earthworm which is new to Great Britain, and, at the same time, new to science as well.

I may, in the first place, give a plain account of the worm in English, following it with a brief diagnosis, corresponding with that supplied of the Ruddy Worm (*Lumbricus rubescens* Friend), as described by me last year in a communication to the Linnean Society (Journal of Linn. Soc., Zoology, Vol. xxiv, p. 305).

The adult worm is 4 inches or 10 cm. in length when well preserved in alcohol. It is 8 mm. across the girdle and sexual organs, while the tail is spatulate or flattened so as to measure nearly a centimetre in diameter. In colour it is ruddy brown, but lighter than the common earthworm usually is, though in size and other particulars it closely resembles that species (*L. terrestris* L.), which we may regard as the type of the genus. The lip or prostomium forms with the peristomium or first ring, a perfect mortise and tenon, while the under side of the lip is marked by a forked groove. This is undoubtedly of service to those species which possess it, as it enables the worm to grasp its food more firmly than it could otherwise do. The under surface of the peristomium is deeply ribbed or indented. On the fifteenth segment we find a pair of prominent pale papillæ on which the male pores are situated. In front of these on the preceding segment the female apertures can be clearly discerned

while running backwards, and closely connecting the male pores with the girdle, we find a band or ridge similar to that which is often seen very distinctly in the Red Worm (*L. rubellus* Hoffm.). The girdle occupies five segments only (33-37). Every species of *Lumbricus* previously found in Great Britain possessed six girdle segments, but we find an analogous instance on the continent where one species (*L. melibæus* Rosa) is described as having a girdle of five segments. Along these segments there runs on either side a prominent band (*tubercula pubertatis*), which appears to cover and connect the whole girdle. In reality, however, the band occupies segments 34-37. The most remarkable feature about the girdle is the large clitellar papillæ on the 34th and 36th segments. We have no other species of *Lumbricus* which regularly exhibits these organs. In the allied genus *Allolobophora* they are frequent. I once observed them in a specimen of the Red Worm (*L. rubellus* Hoffm.) received from Dublin, but no other example has hitherto come under my notice.

The position of the band (*tubercula pubertatis*) is of extreme interest, as we are able, by the discovery of this species, to fill a curious gap. Dr. Rosa, some years ago, drew up a chart in which he displays the arrangement to the clitellar band in the different species of *Lumbricus*. We are now able to modify and improve the table.

<i>L. rubellus</i> Hoffm.	28	29	30	31							
<i>L. purpureus</i> Eisen		29	30	31	32						
<i>L. melibæus</i> Rosa			30	31	32	33					
<i>L. tyrtæus</i> Savigny ¹				31	32	33	34				
<i>L. forma</i> No. 5, Rosa ²					32	33	34	35			
<i>L. terrestris</i> Linn.						33	34	35	36		
<i>L. papillosus</i> Friend							34	35	36	37	
<i>L. rubescens</i> Friend ³								35	36	37	38

A similar chart might be prepared to enable us to see at a glance the position of the first dorsal pore. I give the Irish forms herewith in order that it may be perfected as our knowledge grows.

¹ I strongly suspect this is the same as *Allo. profuga* Rosa.

² A form described by Rosa in 'I Lumb. del Piemonte,' p. 22.

³ Rosa places here *L. festivus* Savigny, but the description is too brief to enable us to decide whether or not they are synonymous.

<i>L. rubescens</i> Fr.	5	6	
<i>L. purpureus</i> Eisen.	6	7	
<i>L. rubellus</i> Hoffm.	7	8	
<i>L. terrestris</i> Leim.	8	9	
<i>L. papillosus</i> Friend	9	10	

How far this character is constant remains yet to be demonstrated, though Ude has made elaborate investigations which seem to indicate that its value is not to be despised in diagnosis. It will be seen, if the foregoing chart is reliable, that there is at present no apparent relationship between the position of the first dorsal pore and the first clitellar papilla.

The setæ are in four couples on each segment, and are slightly wider apart than in the other species. On account of the presence of clitellar papillæ in this species and no other, I have named it *L. papillosus*, a designation which I think well calculated to express the principal feature. Rosa has recently pointed out the fact that Müller has already adopted the term *papillosus* for another species of annelid.

Following the diagnosis of the Ruddy Worm (*L. rubescens* Fr.), and that of the other species found in Eisen's memoir, I now give a brief description of the new species.

***Lumbricus papillosus*, sp. nov.**

Corpus elongatum aut crassum, antice cylindricum, postice spatulatum.

Lobus cephalicus (sive prostomium) magnus, antice rotundatus, postice segmentum buccale (id est peristomium) in duas partes dividens; infra pallidus, sulco longitudinali furcato.

Tubercula ventralia plerumque conspicua in segmento 15.

Cingulum e quinque segmentis (33-37) confectum; infra duobus parallelis tuberculis in segm. 34, 35, 36, 37, cum duabus papillis in utroque latere infra segmenta 34 et 36.

Setæ ubique binæ approximatae.

Segmenta circa 130.

Longitudine circa 10 cm., max. diam. 8-10 mm.

Prima foramen dorsi inter segmenta 8-9.

Internally the Papillose Worm has the typical number and arrangement of essential organs—the gizzard in segments 17-18, two pairs of spermathecæ in 9 and 10, and three pairs of sperm-sacs.

At the present moment the species of *Lumbricus* known to occur in Great Britain are five in number. A brief account of the four remaining species I submit herewith. I have carefully studied specimens of

each, which have been received from different parts of the kingdom, and find that they are typical in character, and widely distributed.

The Common Earthworm (*L. terrestris* Linn.), though formerly very vaguely defined, and constantly confused with a number of other species, especially the Long Worm (*A. longa* Ude), is now easily recognised by the constancy of its girdle and band. It is the largest of our native terrestrial annelids, often reaching a length of six or eight inches, when living undisturbed in rich vegetable mould. It is of a warm brown colour, usually iridescent on the back and flesh-coloured beneath. On the fifteenth segment it carries pale coloured papillæ, on which are situated the male pores. These papillæ are a good starting-point when the segments have to be counted backwards to ascertain the position of the girdle. I have examined many hundreds of specimens at all seasons of the year, and have, without a single exception, found the girdle in the mature worm covering the 32nd to the 37th segments, the four innermost of which have the tubercula pubertatis on the ventral surface. The setæ are arranged on the under-side of the body in four double rows, whereas in the tree-worms they form eight single rows nearly equi-distant all over the body. When irritated, the worm exudes a clear, colourless slime, but we never find a liquid substance poured from the dorsal pores. In the case of the Tree Worm, and several species of *Allolobophora*, this is the case, while a few instances occur in which a smell of garlic, or some other vegetable, is emitted.

The Ruddy Worm (*L. rubescens* Friend) is identical in point of size and colour with the new species described above. It was first discovered by me in Yorkshire a couple of years ago, and described in detail in the Linnean Society's Journal, Zoology, vol. xxiv, p. 305 et seq. The Irish specimens which I have examined in no way differ from the type, which is about four inches in length, and has an average number of 120 segments. It has probably been mistaken by earlier investigators for one or other of the worms which it closely resembles, though Savigny may have intended this species when he wrote his brief account of *L. festivus*. The curious point about the matter is that no one on the Continent has ever found a worm answering to the description of Savigny, though he wrote more than half a century ago. In the Ruddy Worm we have the male pores again conspicuously situated on papillæ, while in the two remaining species they are wanting altogether. The girdle extends from the 34th to the 39th segment, and, as usual, the band stretches across the four innermost. The discovery of the new worm bridges over the gap between the Common Earthworm and the Ruddy Worm, and they begin their girdle respectively on segments 32, 33,

and 34. This fact is suggestive. I have observed spermatophores on the ventral surface of the body of this worm, between the male pores and the clitellum; but, hitherto, I have failed to discover them on any other species of *Lumbricus*. They are minute sacs of a delicate structure, balloon-shaped, and filled with germs.

The Red Worm (*L. rubellus* Hoffm.) differs from all the foregoing in the forward position of its girdle, and the absence of papillæ on the 15th segment. It is therefore impossible, as a rule, to know where the male pores are situated in this species and the next without counting the segments carefully from the head backwards. When the worm is adult, however, a band is often to be seen running along each side of the body from the girdle forwards to the 15th or 14th segment, similar to that found in the Papillose Worm. The girdle commences on the 27th segment and reaches to the 32nd, the 28th to 31st carrying the *tubercula pubertatis*. This worm appears to be liable to variation, but what the cause may be is not yet known. I have shown in a paper on Hybridity among Worms that the Red Worm may sometimes be found in association with other species. Among the variations which have come under my notice the following are the most important. One specimen received from Dublin had two pairs of papillæ under the girdle exactly after the manner of the Papillose Worm. What Eisen remarked of the species as found in Scandinavia I have found to be true here, viz., that the girdle sometimes begins and ends one segment in advance of the normal position. Then in certain localities the hinder extremity is found to be curtailed, while one specimen received from Bangor recently had the girdle exactly in the position which it occupies in the Continental species (*L. melibæus*). In the latter, however, there are papillæ on segment 15, which did not occur on this abnormal specimen, or we might at once have added another species to our list.

The Purple Worm (*L. purpureus* Eisen) is the smallest indigenous species. When in its finest form one can scarcely distinguish it from the last, but the girdle always occurs one segment further back, extending from the 28th to the 33rd. It is specially fond of burrowing among droppings in pastures, and usually has a tumid ridge on the ventral surface of the 10th segment. The male pores cannot be detected owing to the absence of papillæ. There is good reason to believe that this is the species which Savigny named *Enterion castaneum* in 1829, but the early naturalists had not a sufficient knowledge of the most important characters to make their diagnoses of permanent value. The main points may be best presented in the form of a chart.

A TABULAR VIEW OF THE BRITISH LUMBRICI.

LUMBRICUS.	SEGMENTS OCCUPIED BY			AVERAGE.		PAPILLÆ.	
	Girdle.	Band.	1st Dorsal Pore.	Length.	No. of Segments.	Male Pore.	Elsewhere.
1. <i>terrestris</i> Linn., 1757	32-37	33-36	8/9	5 inches.	150-200	15	26
2. <i>papillosus</i> Friend, 1892	33-37	34-37	9-10	4 inches.	130-150	15	34, 36
3. <i>rubescens</i> Friend, 1892	34-39	35-38	5/6	4 inches.	100-130	15	28
4. <i>rubellus</i> Hoff- meister, 1845	27-32	28-31	7-8	3 inches.	100-120	0	0
5. <i>purpureus</i> Eisen, 1870	28-33	29-32	6/7	2 inches.	80-100	0	10

I beg to point out the great value to the true earth-worms of the flattened or spathulate tail-extremity. So far as I am aware it has never been observed by any of my predecessors that the habitat of the species and the shape of the posterior part have a direct relationship to each other. It is only among those species which expose a portion of their body when in search of food, while the other remains in the burrow, that the distinctly flattened tail is found in our native species. Oriental species are, as a rule, as round as a straw, while our tree-haunting species are usually octangular. I shall have some curious facts to present on this point in another paper on 'Variation among Annelids,' resulting from my study of native earth and tree worms, should such a communication be acceptable. Meanwhile, I am content to observe that the shape of the tail in the genus which we have been studying is of immense value, since it enables the worm to grip its burrow most tenaciously, and so retain its hold if an attempt be made to drag it forth.

NOTES AND NEWS.

The degree of M.Sc. has lately been conferred by the Victoria University upon Mr. W. E. Hoyle, M.A. Oxon, Keeper of the Manchester Museum, and Prof. A. Milnes Marshall, M.A., M.D. Cant., who holds the Owens College chair of Zoology.

The Lincolnshire Naturalists' Union appears to be in a fair way to become a flourishing institution. There certainly was a need for an organisation of this sort in the county, and it is to be hoped that other counties will also follow the example and possess similar ones of their own. Most of the prominent naturalists of Lincolnshire are already enrolled as members, and amongst the recent additions to the list of life members, we note the names of Lord Lilford, of Oundle Hall, and Mr. F. A. Lucas, F.G.S., of Elkington Hall, near Louth.

Naturalist,

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THE present instalment of Bibliography has been compiled and edited by

WM. DENISON ROEBUCK, F.L.S.

The only previous instalment of the Bibliography of these orders of insects was published in the 'Naturalist' for October 1888, pp. 285-286, and dealt with the years 1884 to 1887 inclusive.

ANON. [various observers]. Derbyshire.

Calendar of Nature, 1879 [May-flies, Burton Bridge, S. R. H[allam]., May 12th; Drake-fly, S. R. H., June 2nd; Dragon-fly, S. G., Oct. 25]. 4th Ann. Rep. Burton-on-Trent. Nat. Hist. & Arch. Soc., 1880, pp. 67-70.

ANON. [not signed]. Isle of Man.

Phenological Observations [in Isle of Man; Dragon-fly (*Libellula* [? which]) appears, May 16]. Yn Lioar Manninagh, No. 5, Ap. 1890, p. 162.

ANON. [signed 'Rawdon Lee']. Westmorland, Yorkshire, Derbyshire.

Range of the May-fly [which extends north to Westmorland, where the 'drakes' are common on most waters, including Windermere; also plentiful on Kent and Bela and several Yorkshire streams; generally, north of Derbyshire the 'Stone-fly' is called 'May-fly']. Field, July 4th, 1891, p. 23.

J. ARKLE. Cheshire.

Notes from Cheshire [capture of *Agrion puella* and *A. minium* at Delamere Forest; of *Libellula quadrimaculata* at Oakmere, June 13th, 1891; and *Libellula scotica* on Hatchmere Moss]. Ent., Dec. 1891, pp. 286 and 289.

J. ARKLE. Cheshire.

Whit-Monday [June 6th, 1892] in Delamere Forest [yielded hundreds of *Libellula quadrimaculata* and *L. scotica*]. Ent., July 1892, p. 169.

J. ARKLE. Cheshire.

[*Æschna juncea* and *Sympetrum scoticum* at Delamere Forest, Sep. 17, 1892, recorded in a note on] *Colias edusa* . . . in England in 1892 . . . Ent., Nov. 1892, p. 276.

W. HARCOURT BATH. Westmorland and Furness.

Agrion puella at Windermere [in immense abundance, first week of August, 1887]. Nat. Monthly, Nov. 1887, p. 51.

W. HARCOURT BATH. Westmorland and Furness.

Agrion puella, &c., at Windermere [in immense abundance on the borders of the lake, Aug. 1887]. Ent., Feb. 1888, p. 62.

W. HARCOURT BATH [not signed]. Westmorland.

Among the Dragon-flies [a gossipy paper, with a notice of the capture of *Enallagma cyathigerum* abundantly at Bowness-on-Windermere, Aug. 1887; habitat described]. N. H. J., April 15th, 1892, p. 38.

W. HARCOURT BATH [not signed]. Linc. N.

Some Famous Collecting-Grounds for Dragon-flies. By the Author of "An Illustrated Handbook of British Dragon-flies," : . III.—The Fen District [noting *Leucorrhinia dubia* (Glandford Brigg in Lincolnshire, very local), and *Erythromma najas* (has been taken in Lincolnshire, but very rare and local)]. Illust. Handb. of British Dragon-flies; reprinted in Sci. Goss., May 1892, pp. 97-98.

- W. HARCOURT BATH [not signed]. Westmorland and Furness.
Some Famous Collecting-Grounds for Dragon-flies. By the Author of "An Illustrated Handbook of British Dragon-flies," . . . V. —The English Lake District [giving a list of 22 species found round Windermere and Ambleside]. *Sci. Goss.*, July 1892, p. 154.
- H. SHORTRIDGE CLARKE. Isle of Man.
Report of the Entomological Section [of Isle of Man N. H. S. for 1888; repeats G. T. Porritt's list of 6 Neuroptera and 16 Trichoptera from *Naturalist*, April 1888]. *Yn Lioar Manninagh*, No. 2, April 1889, p. 62.
- A. E. EATON. Cumberland.
A Concise Generical Synopsis, with an Annotated List, of the Species of British Ephemeroidea [the only northern record is *Ephemerella notata* Eat., River Eden, Cumberland]. *E. M. M.*, June 1888, p. 12.
- A. E. HALL. York S.W.
[Trichoptera observed by] the Yorkshire Naturalists' Union in Edlington and Wadworth Woods [near Doncaster, 16th and 17th Sept. 1891; *Stenophylax concentricus*]. *Nat.*, Nov. 1891, p. 335.
- MATTHEW HENDERSON. Durham.
***Drepanopteryx phalænoides*, L., in Durham [two at Gibside; details given, and ed. note by R. McLachlan].** *E. M. M.*, April 1890, p. 110.
- P. M. C. K[ERMODE]. Isle of Man.
Phenological Observations [giving Manx dates for 'Dragon-fly (*libellula*)']. Yn Lioar Manninagh, No. 2, April 1889, i. 64; and No. 9, April-Oct. 1891, p. 293.
- JAMES J. F. N. KING. York Mid W.
[*Cæcætis notata* Ramb. occurs in four British localities, one being on the River Wharfe near Tadcaster, where a few were taken by F. G. Binnie]. *Proc. N. H. S. Glasg.*, New Series, vol. iii. part I, 1888-89 (1889), p. ix.
- R. McLACHLAN. York N.W.
***Drepanopteryx phalænoides*, L., in Yorkshire [captured 28th Aug. 1886, in Deepdale, Teesdale, by Mrs. Hutchinson].** *E. M. M.*, Feb. 1890, p. 52.
- J. EARDLEY MASON. York N.E.
[Trichoptera observed by] The Yorkshire Naturalists' Union at Robin Hood's Bay, [21st June, 1889; *Limnophilus centralis*, named by G. T. Porritt, taken]. *Nat.*, Aug. 1889, p. 230.
- AMOS MITCHELL. Durham.
***Drepanopteryx phalænoides*, L., in Durham [one Oct. 1885, beat from Alder overhanging the Waskerley Burn, near Wolsingham].** *E. M. M.*, March 1890, p. 90.
- GEORGE T. PORRITT. I. of Man.
An Entomological Expedition to . . . the Isle of Man [Aug. 1887; *Isopteryx burnmeisteri*, *Leuctra fusciventris*, *Hemerobius micans*, *H. humuli*, *H. subnebulosus*, *H. nervosus*, *Limnophilus centralis*, *L. auricula*, *L. sparsus*, *Sericostoma personatum*, *Lepidostoma hirta*, *Berica pullata*, *Odontocerum albicorne*, *Hydropsyche instabilis*, *Philopotamus montanus*, *Wormaldia subnigra*, *Plectrocnemia conspersa*, *P. geniculata*, *Polycentropus flavomaculatus*, *Tinodes assimilis*, *Rhyacophila dorsalis*, and *Agapetus fuscipes*, noted, with details of locality and habitat]. *Nat.*, Ap. 1888, p. 106.
- GEO. T. PORRITT. York S.W. and N.E.
***Chrysopa tenella*, &c., in West Yorkshire [in Wharnccliffe Woods, near Sheffield, June 23rd, 1888, and one at Saltburn, Aug. 1886; *Micropterna sequax*, *Wormaldia occipitalis*, and *Berica pullata* common in Pennyspring Wood, Huddersfield; particulars and dates given].** *E. M. M.*, Nov. 1888, p. 132.

- G. T. PORRITT. York S.W.
 [Neuroptera observed with] The Yorkshire Naturalists' Union at Holmfirth [10th June, 1889; *Sialis fuliginosa*, *Nemoura meyeri*, *N. variegata*, and *Hemerobius humuli* taken]. Nat., July 1889, p. 203.
- GEO. T. PORRITT. York Mid W.
Phacopteryx brevipennis, Curt., at York [taken by G. C. Dennis and Geo. Jackson, probably at Askham Bogs; *Leptocerus nigro-nervosus* taken near the river at York last June by G. C. Dennis]. E. M. M., Nov. 1890, p. 304.
- GEO. T. PORRITT. York S.W.
 . . . Neuroptera, Trichoptera, and Orthoptera, near Thorne Waste [July 16th, 1891; *Sympetrum scoticum* in abundance, *Limnophilus marmoratus*, *L. lunatus*, *L. auricula*, *L. flavicornis*, and *Asynarchus cænosus* noted]. Nat., April 1891, p. 118.
- G. T. PORRITT. York Mid W.
 [Neuroptera and Trichoptera observed with] the Yorkshire Naturalists Union at Malham and Gordale [on Sept. 11th, 1890; *Leuctra fusciventris*, *Nemoura meyeri* (abundant), *Stenophylax concentricus*, *Halesus auricollis* (common), and *Agapetus fuscipes*]. Nat., June 1891, p. 177.
- GEO. T. PORRITT. York S.W.
Stenophylax alpestris in Yorkshire [taken by John Harrison of Barnsley; locality uncertain, but probably Dunford Bridge]. E. M. M., Sept. 1891, p. 249.
- G. T. PORRITT. York S.E.
 [*Æschna juncea* taken in York Dale, 3rd August, by N. F. Dobrée, when with] the Yorkshire Naturalists' Union on the Wolds. Nat., Oct. 1891, p. 303.
- GEO. T. PORRITT. York Mid W.
 [Neuroptera observed with] the Yorkshire Naturalists' Union at Horton-in-Ribblesdale [14th May, 1892; *Nemoura meyeri* and *Leuctra fusciventris*, both common]. Nat., June 1892, p. 181.
- G. T. PORRITT. York S.W.
 [Neuroptera and Trichoptera observed by] the Yorkshire Naturalists' Union at Penistone and Dunford Bridge [on 9th July, 1892; *Stenophylax alpestris*, *Sialis fuliginosa*, and *Plectrocnemia conspersa*; the first a valuable confirmatory record]. Nat., Sep. 1892, p. 257.
- G. T. PORRITT [per J. H. ROWNTREE]. York Mid W.
 [Neuroptera and Trichoptera observed by] the Yorkshire Naturalists' Union at Grassington [on June 20th, 1891; *Chloroperla grammatica* (abundant), *Isopteryx burmeisteri*, *I. tripunctata*, *Nemoura meyeri*, *N. cinerea*, *Sialis fuliginosa*, *Hemerobius protypus*, *Stenophylax stellatus*, *Polycentropus flavomaculatus*, *Rhyacophila dorsalis*, and (new for Yorkshire) *Tinodes dives*; the last fairly common]. Nat., Sept. 1891, p. 265.
- G. T. PORRITT. York N.E.
 [Neuroptera and Trichoptera observed at Castle Howard on the occasion of] the Yorkshire Naturalists' Union[*'s* visit to] Coxwold and Byland [Sept. 1892; *Chrysopa flavifrons*, *Hemerobius micans*, *H. marginatus*, *Leuctra fusciventris*, *Halesus radiatus*, *Anabolia nervosa*, *Limnophilus lunatus*, *Micropterna sequax* and *Rhyacophila dorsalis*]. Nat., Nov. 1892, p. 349.
- GEO. T. PORRITT. York S.W.
Stenophylax alpestris at Dunford Bridge, West Yorkshire [July 9th, 1892; several occurrences]. E. M. M., Dec. 1892, p. 311.

NOTE—COLEOPTERA.

Acanthocinus ædilis at Nottingham.—In the September issue of the 'Naturalist' Mr. Roebuck records the capture of two specimens of this interesting beetle in Yorkshire. As I have not seen it recorded for Notts, it may be worth while to state that a very fine specimen was captured by the Trent-side at Wilford, near Nottingham, on August 26th last, and is now in my possession.—J. W. CARR, Nottingham, Sept. 2nd, 1893.

NOTES—FISHES.

Opah or King-fish on the Yorkshire Coast.—A very fine example of this Northern fish (*Lampris luna* Gm.), of the most gorgeous colours, and weighing about four stone, was left by the tide, early in August, in a pool on the coast opposite Easington Lane-end. Between 1767 and this date it has been recorded upwards of a dozen times on the Yorkshire coast. It has been taken off the Norwegian coast, where it is common, weighing 140 pounds, and the flesh is reported as red and of the most excellent quality.—JOHN CORDEAUX, Eaton Hall, Retford, Sept. 5th, 1893.

The Lamprey in North Lancashire.—The following cutting is from the 'Ulverston News,' June 24th, 1893:—'EXTRAORDINARY CATCH.—On Friday evening last, while several fishermen of Broughton were up the river Lickle rod-fishing, their attention was directed by some youths on the river-bank between Low Moss and the Bleansley Bridges to two enormous anguilliform fish, which appeared to be engaged in deadly feud; after several fruitless efforts to tempt them to take the bait, one of the young fellows, after taking the precaution to protect his hand, got into the river, and eventually succeeded in throwing both fish out of the water. They proved to be of the eel species, called petromyzon or lampreys. Both fish were about two feet long, and weighed about 2 lbs. each.' The Lickle is a stream in the neighbourhood of Broughton-in-Furness, which joins the Duddon below Duddon Bridge. Can they be *Petromyzon marinus* L.? For its occurrence in this district see Mr. Macpherson's 'Fauna of Lakeland,' 1892, pp. 525-6.—LISTER PETTY, Ulverston, June 26th, 1893.

NOTES—MOLLUSCA.

Viviparus contectus still living at Askern.—On the 15th June, when with the Y.N.U. excursion, Mr. Grabham and I went to Trumfleet Marshes, and in one of the dykes we made an interesting find—namely *Viviparus contectus*, the Viviparous Water-snail. We observed several of them and secured three good-sized specimens, which are now living in my aquarium. I notice by the programme that this species is considered extinct in this district, but judging from the number we saw during about a quarter of an hour's search, it must be fairly abundant, but is very difficult to see, owing to the thick covering of duckweed, which chokes up the surface of the water.—W. J. CLARKE, Huntriss Row, Scarborough, June 24th, 1893.

Viviparus contectus at Askern.—I have had an opportunity of examining living specimens of *Viviparus contectus* taken by Messrs. W. J. Clarke and Grabham of Scarborough on the 15th June, in Trumfleet Marshes near Askern. There seems now no doubt that this species still survives in the district, and the conjectures so long entertained by conchologists acquainted with the district and the lacustrine deposits which there abound, may be definitely set at rest. Mr. Clarke considers that from the number of specimens he saw in a very short time, this interesting mollusc must be fairly abundant.—FRED. W. FIERKE, 52, Francis Street West, Hull, September 16th, 1893.

In Memoriam.

J. W. DAVIS, F.L.S., F.G.S., F.S.A., ETC.

THE death of Mr. J. W. Davis, of Halifax, to which brief reference was made in 'The Naturalist' for September, has created a widespread feeling of regret among Yorkshire naturalists of all classes, and has left a gap in the ranks of the more earnest workers that will not be easily or readily filled up. His long and official connection with the Yorkshire Naturalists' Union and the Yorkshire Geological and Polytechnic Society, and other local scientific bodies, made his tall and erect figure a familiar one to almost every naturalist in the county, and such was the impression made upon those who were brought into contact with him, that there are probably few who do not feel that in him they have lost an energetic co-worker and a valuable and trusty friend. Already several sketches of his life, his characteristics, and his work have appeared in various journals, but his close connection with the societies to which many of the readers of 'The Naturalist' belong, make it desirable that we should add a further tribute to his memory and place on record our appreciation of his scientific labours and the impressions his personality made upon those who had the privilege of enjoying his most intimate friendship.

It is now generally known that, descended from an old Gloucestershire family, he was born in the neighbourhood of Leeds on April 15th, 1846, and that from his youth up he manifested a strong and intelligent interest in natural history pursuits. One who knew him while still in his teens, and before his removal to Halifax, often recalls the fact that even then he displayed great force and individuality of character, and had always some clearly-defined object in view which he pursued with a will and an energy that speedily brought it within his grasp. At an early period he realised the value of the friendship of congenial spirits, and was honorary secretary of a small Natural History Society which used to meet in the old Assembly Rooms, near Call Lane. On his removal to Halifax in 1864, he became one of a band of thorough workers, which included Messrs. W. P. Sladen, W. Cash, and J. Stubbins, but he still kept up his connection with scientific friends in Leeds. Regularly every week he attended the meetings of a private scientific association, which included in its membership the late Mr. James Abbott, Messrs. F. A. Lees, W. Todd, and T. Hick, and after its amalgamation with the Naturalists' Club, which originated later on, Mr. Davis took an active part in promoting the success of the new society, which still exists as the Leeds Naturalists' Club and Scientific

Association. In recognition of his services to this society he was subsequently elected a life member.

As a member of the executive of the Yorkshire Naturalists' Union, he was drawn into a close connection with some of the ablest of his fellow-workers, and for some years he and the late Mr. George Brook, with Messrs. Hobkirk, Cash, Sladen, and others met regularly for the study and discussion of biological problems.

Though perhaps of minor importance, these facts seem deserving of mention, because there can be little doubt that this close association with others like-minded to himself, had considerable influence upon Mr. Davis's subsequent scientific work when he took up his special line of research. A striking feature of that work, both at this time and later, was the practical character of his methods. Whatever subject he took in hand was dealt with in the concrete, and was always abundantly illustrated by actual specimens. His habit of mind, indeed, seems to have inclined more to the practical and the concrete than the theoretical and abstract, and it was no doubt this that made his activity on the School Board and the Corporation of Halifax, and in other public matters, so serviceable to the best interests of his fellow-townsmen. At the same time he had a ready perception of the acceptability or otherwise of scientific theories, and was not unskilful, when he had thoroughly studied his facts, in detecting and applying their theoretical teachings.

To this habit of mind we may, perhaps, also attribute his success when, in the full maturity of his faculties, he elected to devote himself to the investigation of Fossil Fish. The measure of that success will be fully estimated in due time, and we do not propose to anticipate it here. But any one who has perused the monographs which his unflagging industry enabled him to give to the world, will have recognised the directness of the treatment and the firm grasp of structural details which they exhibit. The style too bears testimony to the same characteristics, for it is clear, simple, and precise, and is destitute of those flourishes which are often resorted to by those whose knowledge of details is wanting in thoroughness.

In addition to pursuing his own investigations with more than usual energy, Mr. Davis was ever ready to stimulate and encourage the efforts of others in their scientific pursuits, whether as private individuals or as members of scientific societies. His wide knowledge of the geology of his native country made him an invaluable leader on a geological excursion, and he was ever ready to act in that capacity to those who wished to visit those parts of the county where its geological features can be best studied. Affable and accessible, too, at all times, his private collections were open to

the inspection of all real students, the only passport to his sympathy being a genuine appreciation of scientific studies.

Finally, a word may be said of the genial disposition and equability of temper that Mr. Davis invariably displayed, and the large-hearted hospitality with which he was wont to entertain his friends. On those occasions, the guests at Chevinedge invariably felt themselves to be the recipients of a welcome, the cordiality of which could scarcely be surpassed, and the memory of which will never be obliterated. Then, too, the shrewdness, the breadth of knowledge, and clear perceptions of the host shone conspicuously forth, while his light, harmless banter and sparkling humour added to the charms of the conversation on lighter topics.

As complete lists of Mr. Davis's scientific publications have already appeared and are included in the bibliographies given from time to time in 'The Naturalist,' they need not be repeated here. It may nevertheless be mentioned that the most important are the section on Geology in 'West Yorkshire,' published by him and Mr. F. A. Lees in 1878, and his three monographs on Fossil Fishes, viz., 'On the Fossil Fishes of the Mountain Limestone of Great Britain' (1883), 'On the Fossil Fishes of the Chalk of Mount Lebanon and Syria' (1887), and 'On the Fossil Fishes of the Tertiary and Cretace—Tertiary Formations of New Zealand' (1888).

His death took place on the morning of July 20th, 1893, at Bridlington, and he was interred at All Saints, Salterhebble, near Halifax, on July 24th.—T. H.

NOTES AND NEWS.

Yorkshiremen will be interested to learn that Mr. H. Speight, author of the valuable and recently issued history of Craven, which was reviewed in 'The Naturalist' for April last, and the whole edition of which, we understand, is now nearly exhausted, is engaged in the preparation of a complete (illustrated) History of the Nidd Valley, some part of which adjoins the Craven Deanery, and a large proportion also is comprised within the Archdeaconry of Craven. The book will deal in a novel and comprehensive manner both with the history and scientific aspects of the interesting dale.

Mr. F. Arnold Lees is preparing for this work one of the Appendices, to deal with the Florula of Nidderdale, giving an analysis of its flora as compared with the other dales north and south of it; also a list with localities, brought up to knowledge in 1893, of its species-items. The Flowering Plants and Ferns number 711, about 27 more than are given for Nidderdale in the Flora of West Yorkshire, but the feature of the analysis and enumeration for Mr. Speight's work is not to mirror the past-age Flora (the Flora of West Yorkshire does that in giving the old records) but to give a full and precise list of what occur *now*. Memoranda (with specimens, which will be returned carefully) of gatherings of the last seven years, are desired; especially from the dale-head, above Lofthouse; and the tract about Nun Monkton, Wilstrop and Green Hammerton, which has not been well worked. Probably a York botanist or two knows this area. Notes sent in response to this may be addressed to Mr. F. Arnold Lees, at 80, Franklin Road, Harrogate.

DISAPPEARANCE OF THE GREAT BUSTARD IN LINCOLNSHIRE.

JOHN CORDEAUX, M.B.O.U.,

Eaton Hall, Retford.

THE very last appearance of this noble bird in Lincolnshire is unrecorded; it probably took place in the early years of the present century. The Rev. Edward Elmhirst in a letter, dated Nov. 29th, 1886, told me that he quite well recollected his father shooting Bustards and Ruffs and Reeves, on Thoresby Common, and his sending the former to Sir Joseph Banks, then living, about sixty-eight years ago. This would bring it down to 1818. Sir Joseph Banks died in 1820. At the commencement of this century the Lincolnshire wolds had already been partly enclosed and cultivated, turnips being regularly grown in rotation. In the Middle Marsh (in which Thoresby is situated), and the coast marshes, the general enclosure of commons and open lands, and the consequent change of cultivation, took place many years later. These low-country commons were of great extent, and the chief crops were wheat and beans, very little else of any sort being grown. The beans were sown in the spring on winter ploughing, broadcast, and never weeded. It is difficult in days of progressive farming and variety of cropping to realise the slovenly cultivation of these old times, and the breadth given up to bean growing; those who take an interest in the subject should read the 'Agricultural Survey of Lincolnshire,' published in 1799, as made by the celebrated Arthur Young, F.R.S., and secretary to the Board of Agriculture of the time. The large amount of shelter and privacy afforded by these wide areas of unweeded beans would be highly favourable to the protection of the few remaining Bustards still lingering on the coast and middle marshes of Lincolnshire, after they had disappeared from the wolds. 'The Naturalist' is now so extensively circulated and read that I may remind any who have opportunities of inspecting old deeds, letters and family account books that they will be doing good service by extracting and publishing any small matters which directly or indirectly have reference to the former existence of the Great Bustard in the county.

September 5th, 1893.

NOTES AND NEWS.

In connection with the Hull Geological Society a systematic study is being made of the erratics and other glacial phenomena of a portion of Holderness.

Naturalist.

LINCOLNSHIRE NATURALISTS AT WOODHALL SPA.

THE second meeting of the Lincolnshire Naturalists' Union was held at Woodhall Spa on Monday, August 7th. The district for investigation held out special attractions for almost all classes of naturalists, owing to its very diversified nature. A fertile, agricultural district, yet abounding in large woods, waste moorlands, and the drains and marshy lands, so typical of Lincolnshire scenery, it well repaid the trouble of investigation. Considering that this was only the second meeting of the Union, the attendance was very good, and had it not been a Bank Holiday would doubtless have been much larger. Permission had been kindly granted by Mrs. Hotchkin, of Manor House, Kirkstead, and the Rev. J. Conway Walter, to the members of the Union to pass over their estates.

Owing to the Bank Holiday 'tripping element,' most of the trains were late, and instead of a start being made at 10.20 a.m., as originally arranged, it was nearly 11.30 before all got off. Leaving Kirkstead Station, the party, under the leadership of the Rev. J. Conway Walter, proceeded by a cross-country route to Woodhall Spa, then passing through the Spa grounds, along the beck side, past Mrs. Hotchkin's wood to 'Tower O' Moor,' and the Ostler plantations. Several of the members, including the conchologists and coleopterists (who generally form the rear-guard of a party of naturalists) did not go over the whole of the route, but stopped nearer to Woodhall, and from their accounts seem to be well satisfied that they did so.

By 4 o'clock most of the members had returned to the Eagle Hotel, at Woodhall, where, after doing ample justice to meat tea, the sectional meetings were held, followed a substantial at 5 o'clock by the general meeting, at which Mr. F. M. Burton presided.

A vote of thanks to the landowners and also to the Rev. J. C. Walter for leading the party having been passed, the sectional reports were then given.

For the Geological Section, Mr. F. M. Burton, F.L.S., F.G.S., its President, reported as follows:—

The Kimmeridge Clay, on which Woodhall Spa stands, covers a large area of that district of the county of Lincoln. It is eight to nine miles wide in parts, and attains a thickness of about 600 feet. This bed is the representative of the upper Oolite in the county, there being no traces in it of the Portland sand and limestone which are so well developed in Dorsetshire and Wiltshire. It consists of a dark slaty clay, abounding in fossils, and having on the top of it to the east, where it passes under the Neocomian beds of

the Chalk series, a highly bituminous bed of shale resembling the coal measures. In this bed some years ago, in the valley of the Bain, borings for coal were made, which, it is needless to say, proved abortive, and much money was lost in the attempt. In Dorsetshire—whence, from the village of Kimmeridge, the beds derive their name—these shales are so bituminous that they are occasionally used for fuel; and attempts have been made to obtain oil and other substances from them. The thirst after coal in Lincolnshire has not, however, been altogether without its results, as, some years ago, a boring for it at Woodhall led to the discovery of the valuable saline well there, which is now so well known for its curative properties; a boon of far greater and wider worth than the finding of coal would have been, had the search for it been successful. The Rev. J. Conway Walter, who so kindly and ably conducted the excursion, informs us that the properties of the spring were discovered when it welled up out of the borehole, and, spreading over the adjoining land, affected the cattle which drank of it.

The clay is well exposed in some parts of this district in brick-pits and railway cuttings, but, unfortunately, with the exception of a disused pit filled with water—where several nodular masses of stone were met with, thickly covered with *Serpula tetragona*, and one of them having on its surface the impress of an ammonite too much worn for identification—and of another more ancient pit, said to have been excavated in Roman times, no kind of section was met with during the excursion.

On crossing the heath and moorland, the burrowing of rabbits had occasionally turned up patches of fine pale-coloured sand, in parts slightly ferruginous, and having a considerable number of flints scattered about them; while, here and there, a few small erratics were seen, pointing to the influence of the ice action which has so materially altered the surface of this portion of the county.

In connection with the ice drift, I should like to call the attention of all interested in geology to the want of any boulder records within the county of Lincoln. The Secretary of the Committee on 'erratic blocks' in connection with the British Association—Mr. Percy F. Kendall, of the Yorkshire College, Leeds—writing on the subject says:—'Not a single record of an erratic boulder has been received by this Committee in the 21 years of its existence from your county,'* and I can

* In this connection we may call attention to a paper published in the 'Naturalist' for August 1887, p. 225, by Mr. W. Hampton and Mr. H. Wallis Kew, on 'The "Blue Stone" Boulder, Louth, Lincolnshire.'—EDS. Nat.

only say I hope, now that the Lincolnshire Naturalists' Union is started and is likely to be a success, that this defect may be remedied, and I shall be glad to give any information in my power, as to the committee's mode of working, to those who will interest themselves in the subject.

The Botanical Section was officially represented by the Rev. W. Fowler, M.A., the President, and Rev. E. A. Woodruffe-Peacock, Secretary of the section, by the latter of whom the following account is written:—

The Woodhall district has been so thoroughly worked, botanically, that nothing new is likely to turn up except 'escapes,' as *Hypericum hircinum* L. and *Campanula rapunculoides* L. have done in the last few years.

From sixty to seventy good things passed through the hands of the verifiers, from which the following list is selected:—

<i>Lepidium campestre</i> R.Br.	<i>Solidago virgaurea</i> L.
<i>Lepidium smithii</i> Hook.	<i>Gnaphalium sylvaticum</i> L.
<i>Viola flavicornis</i> Sm.	<i>Senecio sylvaticus</i> L.
<i>Saponaria officinalis</i> L.	<i>Hieracium umbellatum</i> L.
<i>Drosera rotundifolia</i> L.	<i>Hieracium boreale</i> Fr.
<i>Drosera intermedia</i> Hayne.	<i>Calamintha acinos</i> Clairv.
<i>Epilobium macrocarpum</i> Leight.	<i>Galeopsis bifida</i> Boenn.
<i>Epilobium parviflorum</i> Schreb.	<i>Polygonum hydropiper</i> L.
<i>Epilobium palustre</i> L.	<i>Alnus glutinosa</i> Gaert.
<i>Circaea lutetiana</i> L.	<i>Narthecium ossifragum</i> Huds.
<i>Pimpinella magna</i> L.	<i>Juncus acutiflorus</i> Ehrh.
<i>Valeriana sambucifolia</i> Mikan.	

The following plants, which certainly grow at Woodhall, were not taken:—*Anagallis pallida* Hooker; *Pedicularis sylvatica* L., sp. in the County Herb.; *Pinguicula vulgaris* L., often confirmed.

After the meeting the Rev. J. C. Walter, of Woodhall Vicarage, presented his specimen of *Silene quinquevulnera* L. to the County Herbarium. 'It grew in a rough sandy field and has been "improved" away in making a lawn for the garden of the Victoria Hotel; but fifty years ago it was not uncommon about Woodhall.'

Mr. John Cordeaux, M.B.O.U., officially represented the Vertebrate section, and the Rev. J. C. Walter, M.A., reported that the Goatsucker, Wryneck, Lesser Spotted Woodpecker, wild Turtle Dove, and Hawfinch were common in the district, as also Snipe, Dabchicks, Moorhens, Coots, and Wild Duck. The Black Game, which bred on the Moor within living memory, is now extinct; so is the Bittern. The Buzzard and Hen-harrier are gone, but the Brown Owl and Night-jar are still common. The Woodcock breeds here in the still surviving tract of the wild woodland.

The Conchological section was officially represented by the secretary, Mr. F. W. Fierke, M.C.S., who furnishes the following report:—Conchological operations were confined within a small area from Woodhall Spa, and a very poor result rewarded our efforts and the time spent in the locality. The dykes were completely dried up and a pond which looked very promising had also been considerably affected by the drought, thereby preventing its thorough investigation. In one little patch of water *Valletia lacustris* was very plentiful, the majority of them being found upon the rushes growing in the pond. *Planorbis fontanus*, too, occurred here, and a few specimens of *P. carinatus* and *Valvata cristata* were taken in the scoop. The only other aquatic species we have to mention in order to complete this very meagre list is our old and familiar friend *Limnæa peregra*, whom we seldom fail to meet. Laying the scoop aside, an examination of the water's edge resulted in placing on record a species of *Succinea*, the members of which genus form a kind of link between the terrestrial and aquatic mollusca, as they love to mount the flags and rushes of the ponds and dykes or to spend their time in damp situations on the bank-side. The specimens we procured answered the description of *S. putris*. There has been little to report on the water snails, and as regards the terrestrial mollusca we find even less. In addition to the *Succinea* already mentioned, we noticed *Arion minimus*, *Helix retundata*, *H. hispida*, *Hyalinia cellaria*, *H. nitidula*, and last, but not by any means least, we had the pleasure of finding *Hyalinia excavata*. The discovery of the last-named species (taken on dead leaves in a hedge bottom) was the redeeming feature of an otherwise disappointing day's work. It was also a record for the county. Summing up the results, the terrestrial and aquatic mollusca had suffered alike from the extreme dryness of the season, and this fact alone accounts for the poor list obtained, as the district generally speaking seems to be a promising one.

The Entomologists of the party appear to have had a fairly good time. Mr. R. W. Goulding, who had confined his attention principally to the Lepidoptera, noted the Red Admiral, the Peacock, Common Blue, Wall Brown, Ringlet, and Small Heath butterflies. Mr. Joseph Coe and Mr. Walter F. Baker, arriving by an early train, alighted at Woodhall Spa and proceeded back along the road-side to Kirkstead. This road, a typical country road, and evidently undisturbed by omnivorous 'collectors,' abounded in numerous silken tunnels of *Agelena labyrinthica* and some very fine specimens of the spider itself were seen, though owing to the numerous outlets to the 'tube,' and the prickly nature of the gorse in which it was placed,

only a single specimen was obtained. Butterflies, principally Meadow Brown, Small Heath, and Large and Small Whites were in great abundance along the road-side, and by sweeping the nettles which were abundant there, *Coccinella 7-punctata* and *Halysia 22-punctata* were found, together with *Apion pomonæ* and *Ceuthorrhynchus assimilis*. Arriving at Kirkstead Station a dyke near to was carefully examined, but *Hydroporus palustris*, *Anacæna limbata*, and *Hydrobius fuscipes* were all that were obtained.

At 11.30, a second start was made from Woodhall Station, the number of Coleopterists having increased to three owing to the arrival of Mr. E. J. Slater. This time the way taken was through the Spa grounds and by the beck-side, intending to proceed to the Tower on the Moor, but the district proving to be remarkably good, not more than half the distance was passed over. Crossing the beck, just through the Spa grounds, into a small wood, some decaying fungi produced *Leistotrophus murinus* and *Nitidula bipustulata*, whilst by sweeping here *Phædon cochlearia* and *Halysia conglobata* were added to the captures. A closely grazed grass field was then the scene of investigations. At this time the sun was very powerful, and the perfect grasshoppers were flying about in all directions, though their flight never appeared to be sustained for a greater distance than about ten yards, while the larvæ, unprovided with wings, were trying to rival their elder brethren by their gigantic leaps. Whilst turning over some stercoraceous matter, a fine specimen of *Leistotrophus nebulosus*, evidently enjoying the bright sunshine and drawn by the (at any rate to him) attractive smell, came flying up, and seemed to resent most fiercely being confined in a small glass test-tube when secured. The species of *Aphodius* were here very common, *A. rufipes*, *A. fimetarius*, *A. fætens*, *A. fossor*, *A. merdarius*, *A. ater*, and *A. subterraneus* being all found in this one field, and also *Onthophagus fracticornis* in abundance, being the first time that any of the coleopterists present had seen this beetle alive. Instead of being distributed indiscriminately throughout the dung it was always in the same position, immediately under the upper caked surface, and one specimen was on the outside, as though it had just flown on, making it appear as though diurnal in its habits, like *Aphodius fimetarius*, and not nocturnal, as *A. rufipes* and most others. *Philonthus æneus* was remarkably common in similar situations, and also several *P. proximus* and *Hister unicolor*. Sweeping the long herbage on the side of Mrs. Hotchkin's wood only produced *Apion cruentatum*, *Longitarsus jacobææ*, and *Agriotes sputator*. *Sphæridium scarabæoides* and *S. bipustulatum*, *Cercyon hæmorrhoidalis*, *C. melanocephalus*, and

C. pygmæus were also found, together with the variety *semistriatum* of *Sphæridium bipustulatum* with distinctly punctured striæ on the elytra. *Geotrupes spiniger* was found here at an average depth of about four inches, owing to the hard nature of the ground. Under the loose bark on the fallen trunk of an ash-tree lying across the dyke *Mycetophagus piceus* was very abundant indeed. In colour it exactly matched the decaying wood, and the beetles seemed to be fully aware of the fact, and remained perfectly still until just as you were going to pick them up, and *then* livelier specimens could hardly be imagined, and if two commenced to run at the same time one of them was almost sure to escape. Proceeding along the wood side and crossing a small dyke in which *Velia currens* was about the only visible sign of animal life, we came to a couple of ponds in a semi-dried up state. *Loricera pilicornis* was abundant round the edges, and *Elaphrus cupreus* was seen, though not captured owing to its great speed and the boggy state of the pond edge. Here the soil became much looser, and several *Geotrupes stercorarius* were dug up from a depth of about twelve inches. A nest of ants with the winged males and females clustering round the outside was here seen, and then the time for tea arrived and a hurried return had to be made for the Eagle Hotel. Needless to say, the Swallow-tail Butterfly, once common in the swamps and by the river-side, was not obtained. Owing to the very dry state of everything, 'stone-turning' had been of very little use, the only captures being *Xantholinus fulgidus*, *Harpalus æneus*, *Pterostichus madidus* and *P. niger*, *Calathus melanocephalus*, and under some stones in a dried up pond *Agabus guttatus* and *A. bipustulatus*.

The section for Micro-Zoology and Botany was officially represented by Mr. J. Larder, who supplies the following report:—Owing to the small attendance of workers in Micro-Zoology and Botany, the records were not numerous, but the following freshwater algæ, kindly identified by Mr. T. S. Smithson of Rochdale, were obtained at Jordan's Ponds, near Woodhall. The first three are hitherto unpublished records for the county:—*Rhaphidium falcatum*, *Cœlesphærium kutzingianum*, *Merismopedia glauca*, *Scenedesmus quadricauda*, *Pediastrum boryanum*, *P. ehrenbergii*, *Pandorina morum*, and *Conferva fontinalis*.

After the reports, some private business was transacted, and a vote of thanks to the chairman, Mr. F. M. Burton, concluded the proceedings.—W. F. B.

NOTES AND NEWS.

The August 'Journal of Botany' has a reproduction of Forster's portrait of Mr. John Gilbert Baker, F.R.S., which was shown at this year's Royal Academy.

THE MOLLUSCA OF PENISTONE, SOUTH-WEST YORKSHIRE.

LIONEL E. ADAMS, B.A.,

Northampton; Hon. Treasurer to the Conchological Society.

THE following is a list of the shells which I have taken within five miles of Penistone, during the period of my residence there, from January 1889 to December 1892. The total number of species I am able to record is 35, composed of 9 slugs, 19 land and 7 freshwater mollusca.

Gunthwaite Wood is the only spot in this desolate region of millstone grit that is worth a search. Its chief features are the quantity of *Hyalinia pura*, and the tendency to white varieties of the *Hyaliniæ*. In summer the Scout Dam is always to be searched for curious forms of *Limnæa peregra* and scalariform *Planorbis albus*.

The slugs have been identified by Mr. W. Denison Roebuck.

Arion ater. Very common. Var. *brunnea*. Gunthwaite.

Arion subfuscus. Common in the district.

Arion minimus. Common in the district, especially in Gunthwaite Wood.

Arion hortensis. Common in gardens; a single specimen of var. *grisea*.

Arion circumscriptus. Very common, and very variable in colour.

Limax maximus. Moderately common in a garden.

Limax arborum. Cubley Wood; a specimen of var. *nemorosa* in my garden at Rose Hill.

Agriolimax agrestis. Very common. On one occasion I found var. *nigra* in copulâ with a typical specimen.

Agriolimax lævis. Common in Gunthwaite Wood.

Vitrina pellucida. Common. Often cloudy.

Hyalinia cellaria. Moderately common. Several specimens of var. *albina* in the district.

Hyalinia glabra. Two specimens of var. *viridans* in Gunthwaite Wood.

Hyalinia alliaria. Common; and the var. *viridula* moderately rare.

Hyalinia nitidula. Common in the district.

- Hyalinia radiatula.** Moderately rare. Cubley Wood. One specimen of var. *viridescenti-alba*.
- Hyalinia pura.** Exceedingly common in Gunthwaite Wood. The number of var. *margaritacea* is nearly equal to that of the type.
- Hyalinia crystallina.** Very common in the district.
- Hyalinia fulva.** Very common in Gunthwaite Wood, and moderately rare elsewhere.
- Helix rotundata.** Very common. Three or four white examples (var. *alba*).
- Helix aculeata.** Moderately common in Gunthwaite and Cubley Woods.
- Helix nemoralis.** Of the form *libellula* 12345 (chiefly); only known from the Huddersfield Railway Embankment.
- Helix hortensis.** Cawthorne; very local.
- Helix hispida.** Rare.
- Vertigo substriata.** One specimen in Gunthwaite Wood.
- Vertigo edentula.** One specimen in Gunthwaite Wood.
- Clausilia rugosa.** Common in Gunthwaite Wood.
- Cochlicopa lubrica.** Moderately common. One specimen of var. *hyalina* in Gunthwaite Wood.
- Carychium minimum.** Common in Gunthwaite Wood. Moderately so in Cubley Wood.
- Pisidium pusillum.** Common in the district.
- Sphærium lacustre.** In a pond at Thurgoland.
- Planorbis albus.** Common in Scout Dam, in which, in 1891, I found several monst. *scalariforme*.
- Limnæa peregra.** Common in the district; especially curious in Scout Dam, where most interesting forms exist, principally labose monstrosities; also banded forms, caused by breakages of the shell when young.
- Limnæa glabra.** In a pond at Thurgoland, with *S. lacustre*.
- Limnæa truncatula.** Common in the district. Var. *major* in a drain.
- Ancylus fluviatilis.** Cubley Brook, and stream feeding Scout Dam.

NOTE—LEPIDOPTERA.

Lobophora polycommata and **Nemeobius lucina** at Windermere.—The capture of *Lobophora polycorummata* this spring at Windermere may be of interest. Also *Nemeobius lucina*, a species which I took commonly many years ago in this neighbourhood, but have not seen for some time.—GEO. CREWDSON, S. Mary's Vicarage, Windermere, 3rd June, 1893.

YORKSHIRE NATURALISTS AT KIRKBY MOORSIDE.

THE 104th meeting of the Yorkshire Naturalists' Union was held on Monday, July 10th, at Kirkby Moorside, for the investigation of those three very pretty dales, Douthwaite-dale, Sleightholme-dale, and Kirkdale.

Many of the members, tempted by the very promising nature of the district, or perhaps by the splendid scenery in the immediate neighbourhood, stayed the week-end at Kirkby, and some very good work was done before the majority of the members arrived on the Monday morning. The weather was not very encouraging, and about half-past eight when the party from Maiton and Scarborough arrived, a few drops of rain fell, but by the time the actual start was made from Kirkby Moorside Station at ten o'clock, the sun shone brightly, and everything seemed to promise a fine day, expectations which were realised with the exception of a heavy thunderstorm which passed over about one o'clock, and damped the garments, if not the ardour, of many of the party.

Three routes had been arranged, but only two were followed. One party under the guidance of Mr. W. B. Havelock, head forester to the Earl of Feversham, proceeded by Kirkdale, up Skiplam, to Sleightholme-dale, returning by Fadmoor and Robin Hood Howl. This was a very numerous party, consisting probably of about forty members.

The other party, consisting principally of geologists, and under the leadership of Mr. W. Lower Carter, M.A., F.G.S., left Kirkby on the north side and proceeded by Manor Vale, then crossing over the country by the Gillamoor Road and passing the Hagg Farm to Kirkdale Valley, and finally returned by Kirkdale Church and Cave to Kirkby.

At four o'clock the calls of nature were satisfied, and then sectional meetings were held, followed at five o'clock by the general meeting. Arrangements had been made to hold this out in the open air, but the weather again caused an alteration in the plans, and it had to be held in the long room of the King's Head Hotel. Mr. J. H. Rowntree, of Scarborough, presided. As usual, 'the minutes having been taken as read,' the following new members were elected:—Mr. H. J. Johnston Lavis, M.D., Harrogate; Mrs. Fawkes, Farnley Hall; Mr. H. Darley, Pickering; Mr. William White, F.E.S., Sheffield; Mr. W. Wallby, Harrogate. The list of societies being called over, the following were represented:—Barnsley, Wakefield, Liversedge,

Bradford Naturalists', Leeds Naturalists', Goole Scientific, Conchological Society, Leeds Geological, Hull Field Naturalists, Harrogate and District, Ackworth School, Scarborough Philosophical, Hull Scientific, Hull Geological, Huddersfield Naturalists', Scarborough Field Naturalists', Leeds Co-operative Field Club. The total attendance was between sixty and seventy.

The sectional reports were then presented.

For the Vertebrate Section, in the absence of all its officers, Mr. J. Farrah reported as follows:—

Mammals, 4.	Chiffchaff.	Sandpiper.
Fox.	Tree Creeper.	Willow Wren.
Hare.	Jay.	Song Thrush.
Rabbit.	Carrion Crow.	Blackbird.
Squirrel.	Cuckoo.	Swift (feeding young).
	Common Wren.	Swallow.
Birds, 26.	Yellow-hammer.	House Martin.
Blue Tit.	Skylark.	
Tawny Owl.	Tree Pipit.	Reptiles, 3.
Partridge.	Lapwing.	Frog.
Starling.	Hedge Sparrow.	Toad.
Sparrow.	Whinchat.	Smooth Newt.
Nuthatch.	Pied Wagtail.	

Mr. W. B. Havelock, of Helmsley, says that he found a nest of the Woodcock containing four eggs in the spring of 1892, and he has observed the Kingfisher breeding here. The same gentleman reports that the Badger and the Otter both have their homes in the dense woods and streams that are so characteristic of this delightful country.

On behalf of the Conchological Section, in the absence of all its officers, Mr. W. Denison Roebuck, F.L.S., reported that very little had been done during the day. Turning over stones for a few minutes in Sleightholme Dale had produced examples of *Clausilia laminata*, *Cl. rugosa*, *Cochlicopa lubrica*, *Helix hortensis*, *H. rotundata*, *H. hispida*, *Hyalinia cellaria*, *H. crystallina*, *Arion ater*, *A. minimus*, and *Agriolimax agrestis*, but the time available was very limited. Mr. Water F. Baker brought fine examples of *Limax maximus* and *L. marginatus* (= *arborum*) found close to Kirkby Moorside, and Mr. John Braim brought *Helix itala* (= *ericetorum*), also from the neighbourhood of Kirkby Moorside, which may be looked upon as decidedly the best record in this department during the day—out of the meagre list of five slugs, and nine land shells, no water shells whatever having been observed.

For the Entomological Section, Mr. Jas. H. Rowntree states that the following lepidopterists were present:—Messrs. J. Braim, J. W. Warwick, J. H. Rowntree, and J. Grabham.

The following imagines were observed:—*Pieris brassicæ*, *P. rapæ*, *P. napi*, *Vanessa urticæ*, *V. atalanta*, *Argynnis aglaia*, *Chortobius pamphilus*, *Satyrus janira*, *S. hyperanthus* (some extreme varieties of the latter with ringlets scarcely discernible), *S. semele* (the last named species in considerable abundance on the slopes of Douthwaite Dale), *Lycæna icarus*, *Larentia didymata*, *Ypsipetes elutata*, *Eubolia mensuraria* (?), *Tanagra chærophyllata*, *Xylophasia polyodon*, *Apamea oculatea*, *Agrotis* (?), *Triphæna pronuba*, and *Pterophorus bipunctidactylus*. The showery weather interfered with the success of the day, from an entomological standpoint, and sugaring in the evening proved a failure.

The coleopterists present were the Rev. W. C. Hey, Mr. Walter F. Baker, and Mr. Frank Colby. The captures were neither numerous nor good, in fact it may safely be said that it was the worst day we have had this season. *Adalia obliterateda* was fairly common in a wood about three miles north of Kirkby, and was apparently feeding on the wild strawberries. *Oxytelus rugosus*, *Ocytus morio*, and the strong-smelling *O. brunripes* were fairly abundant. *Silpha atrata* was found beneath a stone in the valley of the river by Mr. Colby, and *Chrysomela varians*, *Philonthus atratus*, and *Dianois cærulescens* were also obtained, the last-named being under a stone in what had once doubtless been a little watercourse, but the extremely dry weather had made it quite hard and dry. Stercoraceous beetles were fairly common, but nothing worth mentioning was obtained. *Aphodius rufipes* was almost as common here as in the Hull district, whilst *A. fimetarius*, so common round Leeds, was only represented by isolated specimens. *Geotrupes spiniger* was the only *Geotrupes* obtained. Whether it was the unfavourable weather on the actual day, or the extremely dry weather we have hitherto had this year, the three coleopterists were only able to obtain some thirty odd species between them, a most unusually meagre lot even for July, when so many beetles are in the larval state.

For the Botanical Section, Mr. Albert H. Pawson, its Secretary, gives the following report:—

The streams which flow southward into the Rye about Kirkby Moorside and Helmsley have cut their way through the Oolitic Hills in a most singular series of valleys, famed for rare plants. The waters for the most part take their rise on the Lias formation to the north, which, in spite of its lower elevation, its water-logged shales render moorland and waste, while 200 feet above on the limestone cornfields and rich pastures are smiling. Through this Oolitic

plateau each streamlet, neither hastening nor resting, has gnawed its way, and now flows in an almost level course in a flat valley, not much above the mean of the Derwent plain, hemmed in on either side by steep banks which may almost be called cliffs. These sloping sides are much covered with wood, and give delightful occupation to the botanist. In the Ouldray Valley, near Helmsley, the rare *Actæa* and the green Hellebore almost engross one of these steeps, yet making room for their cousin Columbine on account of the kinship, and we found it very fitting that these three choice Ranunculids should grow together. Again, where the rock is exposed in crags, or strewn in fragments on the slope, herbs impatient of moisture find their home. Here it was in Douthwaite that the Hound's Tongue was flourishing, and here the Deadly Nightshade assumed the proportions of a bush, while the Ploughman's Spikenard grew at its feet. The flat bottoms of these valleys, floored with the insoluble particles of the rocks above, are often retentive of water, and form swamps which yield sedges and rushes and other water-loving plants. The lovely Grass of Parnassus was here and the tender Bog Pimpernel, and in one marshy spot far from any homestead the Yellow Mimulus was luxuriating as though it had never known the shelter of a cottage garden.

Other noteworthy plants which were observed were—*Vicia sylvatica*, *Paris quadrifolia*, *Convallaria majalis*, *Rubus saxatilis*, *Scutellaria galericulata*, *Epilobium angustifolium*, *Myrrhis odorata*, *Epipactis palustris*, *Crepis paludosa*, *Scabiosa columbaria*, *Cerastium trinerve*, *Pinguicula vulgaris*, *Geum intermedium*, *Festuca gigantea*, *Hordeum sylvaticum*, *Triodia decumbens*, *Triglochin palustre*, *Blysmus compressus*, *Scirpus sylvaticus*, *Carex flava*, *C. pulicaria*, *C. pallescens*, *C. remota*, *C. panicea*, *C. paniculata*, *Polystichum aculeatum*. On the previous day some of our party gathered *Conium maculatum* and *Echium vulgare* at Helmsley Castle and at Rievaulx Abbey, and *Daphne laureola* and *Ribes alpinus* near the latter place.

The geological report was presented by Mr. W. Lower Carter, M.A., F.G.S., and the following account is written by the Secretaries of the Geological Section, Messrs. W. Lower Carter, M.A., F.G.S., and John W. Stather, F.G.S. :—

Kirkby Moorside lies on the northern edge of the great flattened hollow known as the Vale of Pickering. This roughly oval area is elongated in an east and west direction, and is bounded on the north, west, and south-west by Oolitic hills, and on the south-east by the Chalk Wolds. It is almost entirely covered by alluvial deposits and post-glacial sands and gravels.

The remarkable course of the Derwent—which, rising near the coast, flows westward instead of taking the valleys to the east—is a well-known instance of erratic river-flow, and points to an extension of high land much further to the eastward in the early period of the formation of this vale. The whole of the drainage of this oval area is carried away by the Derwent through the gorge at Malton, and in the opinion of many observers this basin was once a lake or great sea-loch.

On either side of Kirkby Moorside a long sinuous valley runs northwards, cutting deep grooves into the table-like hills and exposing interesting sections of the Middle and Lower Oolitic beds, which dip gently to the south and are exposed in order as we pass northwards. The Lower Oolites, which in this area consist of a great series of estuarine, marine, and freshwater beds, are divided into three series, 'each of which is capped by a thin but well-marked band full of marine fossils' (Fox-Strangways), are exposed at the northern extremities of these valleys, but in their lower reaches the beds seen are confined to the Middle Oolites. It is to these that the attention of the Geological Section was principally directed. Immediately above the dark shales of the Cornbrash (the topmost bed of the Lower Oolites) comes the Kellaways rock, which in this area has a thickness of about 70 feet, and 'is a tolerably massive sandstone which is ferruginous and fossiliferous in the upper part.' Above this comes the Oxford Clay, which in this area is a grey, sandy shale, 'lithologically very unlike its equivalent in the South of England.' Its fossils are few in number and badly preserved.

The Lower Calcareous Grit, about 150 feet in thickness, in this area consists of a massive sandstone which passes gradually into the Oxford Clay beneath, and becomes 'more calcareous in its upper part until it passes into the true limestone above.' Above this come the Passage Beds, which in this area lose much of the distinctness which characterises them more to the east, and are 'less ferruginous and rather more massive in character.' The capping rock of a great part of the tabular hill above Kirkby is the Coralline Oolite, a massive thick-bedded limestone 'composed of minute oolitic grains with a great number of fossils.' This limestone is divided into two principal beds, separated by a set of sandstones known as the Middle Calcareous Grit. Kirkby Moorside itself stands on the Upper Calcareous Grit, whilst the rising ground immediately above the town, to east, west, and south, is capped by blue Kimeridge Clay. This clay is supposed to underly the greater part of the alluvial and lacustrine beds that cover the Vale of Pickering, but is only revealed in occasional isolated hills which rise above the general level of the plain.

The Boulder Clay in the neighbourhood of Kirkby is not more than a few feet thick. It is exposed in the railway cuttings, and consists of stiff clay with erratic boulders.

In the Coralline Oolite of this area there are many caves, one of which—the Cave of Kirkdale—is celebrated by the researches of Buckland. This cave, which is situated at the entrance to Kirkdale, contained an extensive accumulation of bony remains covered by a deposit of mud, the whole overlaid by stalagmite. ‘It is situated about half-way up the face of the quarry along an irregular line formed at the junction of the Chemnitzia limestones with the more earthy limestones above. . . . It is probable that at this horizon in the limestone are formed the numerous ‘swallows’ or underground channels, in which most of the streams in the neighbourhood lose a part or all of their water, and if the denudation of these valleys was carried 100 feet lower, it is probable that a fine series of caves would be exposed in this region’ (Fox-Strangways). No human remains or traces of human workmanship have been found in this cave, nor is there evidence of more than one period of occupation by predacious beasts (Phillips). It would appear to have been a hyæna den, most of the bones being well gnawed, and the proportion of hyæna remains being exceptionally large. Twenty-seven species of mammalia and birds were found.’

The Geological Section left Kirkby Moorside by the Manor Vale, then crossed to Kirkdale by way of the Gillamoor Road and Hagg Farm, worked down Kirkdale from the Hold Chaldron Mill to the Cave, and then back to Kirkby by the low road. The divisions of the Middle Oolite examined during the day were:—

- 1.—The Upper Calcareous Grit.
- 2.—The Upper Limestone.
- 3.—The Middle Calcareous Grit.
- 4.—The Lower Limestones.

1. The Upper Calcareous Grit was seen in the Manor Vale, capping the cliff opposite the ruined castle.

A peculiar argillo-calcareous stone of very unequal development called locally ‘The Throstler,’ was also noted here, forming a narrow band between the Upper Calcareous Grit and the Upper Limestones. In a quarry near Hagg Farm this same rock was observed to be at least twelve feet thick.

2. The Upper Limestone was also best seen in the Manor Vale, especially in the quarry at the north end of the valley. Here the weathered surfaces showed a mass of fossils, quite easy to determine, but, for the most part, defying extraction.

3. The Middle Calcareous Grit. This was observed in the dry bed of the Hodge Beck, in Kirkdale, opposite the church. No fossils seen.

4. The Lower Limestones. The best sections of this division were also seen in the Hodge Beck, between the Hold Chaldron Mill and the Kirkdale Church.

Many of the streams in this district flow underground for some distance, leaving their courses above-ground quite dry, excepting in wet seasons. This was observed to be the case with the Hodge Beck, for, just below the Hold Chaldron Mill, it disappears bodily into a swallow-hole.

Perhaps, in some respects, the most interesting item in the day's proceedings was the visit to the celebrated Kirkdale Cave. Since the time of Buckland about thirty feet of it have been quarried away, and it is now of little interest, excepting in its associations. However, several members of the section, armed with candle and braving all discomfort, entered, and managed to crawl and wriggle a distance of twenty or thirty yards.

The geologists were much indebted to their local guide, Mr. Bowes.

Fossils observed or collected:—

Belemnites abbreviatus.	Pecten fibrosus.
Ammonites plicatilis.	Pecten vagans.
Chemnitzia heddingtonensis.	Terebratula sp.
Nerinaea sp.	Cidaris florigemma (spikes).
Cerithium muricatum.	Pseudodiadema versipora.
Trochus.	Pygaster umbrella.
Pleurotomaria.	Echinobrissus scutatus.
Exogyra nana.	Stylina tubulifera.
Gervillia aviculoides.	Thecosmilia annularis
Avicula ovalis.	Isastræa explanata.
Lima sp.	Thamnastrea concinna.

Besides others undetermined.

Mr. A. H. Pawson then proposed a vote of thanks to the land-owners and guides, and also to the gentlemen who had contributed to the excursion programme. This was seconded by Mr. Farrah and unanimously carried, and the proceedings concluded with a vote of thanks to the Chairman, on the motion of the Rev. W. Fowler.

W. F. B.

NOTE—ORNITHOLOGY.

■ **Flamborough Bird-Notes.**—The fishermen inform me that large quantities of Sea Swallows (*Sterna*) are frequenting our coast this season, more than they have seen for years; also several Shearwaters, both Manx and Cinereous Shearwaters (*Puffinus anglorum* and *P. major*). Not unfrequently the Sabine's Gulls (*Xena sabinii*) make their appearance on the coast. Some of the fishermen are great observers of birds. Mr. George Emmerson, fisherman, shot a Sabine's Gull off the Headland to-day. The Rock Doves (*Columba livia*) are also very plentiful this season; thousands are to be seen flying along the cliffs every day.—
MATTHEW BAILEY, Flamborough, September 20th, 1893.

NEWTON'S DICTIONARY OF BIRDS.

A | **Dictionary of Birds** | by | ALFRED NEWTON | assisted by | HANS GADOW | with contributions from | RICHARD LYDEKKER, B.A., F.G.S., CHARLES S. ROY, M.A., F.R.S., | and | ROBERT W. SHUFELDT, M.D. | (late United States Army). | Part II. | (GA—MOA.) | London: | Adam and Charles Black. | 1893.

Since the notice of Part I. of this important book in the present volume (p. 252) of 'The Naturalist,' Part II. (GA—MOA) has been issued. It is scarcely necessary to say that the high standard of Professor Newton's work has been more than maintained, for it is impossible for even a careless or casual reader to turn over these leaves without being struck with the vast amount of accumulated erudition now for the first time brought together under one cover, combining all the oldest and all the latest information in connection with practical and scientific ornithology.

Part II. of 'A Dictionary of Birds' contains two papers of special interest and importance—Professor Newton's learned and exhaustive article of over 53 pages on 'Geographical Distribution,' and the equally capable and scholarly treatise under the head of 'Migration,' which latter, in our opinion, is the clearest and most satisfactory explanation (as far as the matter is capable of being explained) which has so far appeared in connection with the greatest mystery of the animal kingdom.

Amongst the numerous shorter notices in Part II. it is difficult to make a distinction, but we would particularly call the attention of the reader to excellent articles having reference to the family groups of 'Goose,' 'Grebe,' 'Grouse,' 'Heron,' 'Hornbill,' 'Humming Bird,' 'Jay'; that remarkable creature the 'Kiwi,' the 'Lammergeyer,' 'Lark,' the Australian 'Lyre-bird,' and the 'Megapodes'; also the concluding portion of the 'Gare-fowl' commenced in Part I.

A third and fourth part will complete the work, which is intended to form one handy demy octavo volume of about 1,000 pages.

In conclusion, we can only repeat, after seeing Part II., that when completed it must prove an indispensable handbook for the student and country gentleman, and should certainly not be allowed to pass unread by anyone who pretends to care for ornithology, and is desirous of obtaining correct and reliable information.—J. C.

NOTES AND NEWS.

We have received the first number of a new quarterly, 'The Nature Lover' (London: Elliot Stock), and consider the title fairly descriptive of the magazine. The type and general get-up are all that could be desired, but it cannot be said to rank as a scientific journal. There are one or two readable articles, and whilst wishing the venture every success, we would suggest that the merely sentimental portion could be well dispensed with.

AN ACCOUNT OF SOME OF THE RARER PLANTS FOUND IN AND AROUND SPILSBY, NORTH LINCOLNSHIRE.

J. T. BURGESS, L.R.C.P., L.R.C.S.,
Spilsby.

THE work of a busy medical man in a country practice offers special facilities for the observation of the indigenous flowers abounding within his botanical district, which is the ten-mile radius surrounding the place where he dwells. I myself can vouch that many a journey, otherwise weary and monotonous, has been made interesting and profitable by allowing the thoughts to be attracted to these beautiful wildings of nature. For the past fifteen years I have, in a quiet sort of way, been observing and recording the various natural phenomena of the district, such as the arrival and departure of the migratory birds, the advent of insects, the first opening of flowers, and all the peculiar freaks of nature in the floral and animal world.

What is more to the point in the present paper, I have ever been on the look-out for our less common plants and unrecorded varieties. Altogether I have observed nearly 450 species and varieties, and these I have carefully painted in water-colours from living specimens. The collection formed in this manner has received very flattering notice from the many naturalists who have inspected it, and this has prompted me to publish the following list. It consists of a selected hundred of the rarer plants, most of which are found in the Spilsby district, but in order to include specimens from the shore and estuaries, the area has been extended another five or six miles in a direction chiefly N.E., E., and S.E. In choosing this number I was pleased to find that some of them are still 'first records,' which seems remarkable, considering the many years I have delayed in publishing and the late date of Mr. Lees' 'Outline Flora,' which is surprisingly full of 'new records.'

The Spilsby district, I ought to say, offers special facilities to the naturalist and botanist, on account of its diversity of configuration and soil. It is made up of wold, with both sand and chalk foundation; of fen—peat—with its artificial drains; of marsh—silt—with its innumerable watercourses and, allowing for an extended area eastward, of shore, with its boundary of sand and shingle; and lastly, of estuary, with its stretch of muddy flats; all these replete with a varied life, more or less peculiar, of their own.

I do not claim to have actually discovered every specimen figured in my collection, as I have been much assisted by the efforts

of kind friends. I take this opportunity, therefore, of acknowledging the valuable aid I have received from everyone, and, more especially, from Mr. J. Jarvis Rainey, of Spilsby, whose untiring researches during the last two or three seasons have been rewarded by some specially good finds.

The order in which my list is arranged and named is practically that of the Eighth Edition of the London Catalogue. Where this has not been followed, the authors whose names have been used are given, and, where circumstances justify, special remarks added.

Thalictrum minus var. **maritimum.** **Lesser Meadow Rue.**

1882. A few scattered plants were found on the sea bank at Croft.

Thalictrum flavum. **Yellow Meadow Rue.** 1881. Two

plants were gathered on the border of a plantation at East Keal Carse.

Helleborus viridis. **Green Hellebore.** A solitary specimen

of this somewhat rare plant was discovered in a plantation at Hundleby, by Mrs. Burgess, in 1882, and has been under observation ever since. It also grows freely on a bank at Gunby, but here is probably a garden escape.

Delphinium Ajacis. **Field Larkspur.** In 1880 one plant

was found on some waste ground near the wind-mill at Hundleby. Seed probably blown out whilst dressing corn.

Papaver dubium. **Long Smooth-headed Poppy.** In

1880 a few straggling specimens were gathered from an old garden wall at Eresby.

Corydalis bulbosa. **Solid Bulbous Fumitory.** Appeared

in 1880 in two places near Spilsby. Probably garden escapes.

Corydalis claviculata. **Climbing Corydalis.** 1880. Seen

for several years in a hedge-row at West Keal, but has now disappeared. A first record.

Sisymbrium Thaliana. **Thale Cress.** 1882. On a dry

sandy bank at Toynton All Saints.

Cochlearia Anglica. **English Scurvy Grass.** 1892. On

the banks of the tidal portion of the Witham, Boston.

Thlaspi arvense. **Penny Cress.** 1891. A few specimens

were found in a fen drove at Thorpe.

Senebiera Coronopus. **Wart Cress.** 1879. Grew as a weed

on some waste ground in Spilsby.

Helianthemum chamæcistus. **Rock Rose.** 1892. In a wood

at Well, near Alford.

- Cerastium arvense.** **Field Mouse-ear Chickweed.** 1886.
On the sand-banks south of Skegness.
- Arenaria peploides** Smith. **Sea Purslane.** 1886. Between high-water mark and the sand-banks at Skegness.
- Arenaria rubra** Smith. **Purple Sandwort.** 1879. In a field near the sand-pits off Partney Road, Spilsby. Observed three or four seasons.
- Arenaria marina** Roth. **Sea Sandwort.** 1888. On the mud flat near Gibraltar Point, at the north corner of the Wash. Common.
- Claytonia perfoliata.** 1892. Extends the whole length of a hedge-row in the parish of Hundleby. This rare plant has been under observation at least fifteen years, and was probably introduced in foreign corn. It now grows extensively and seems quite naturalised. A first record for North Lincolnshire.
- Hypericum humifusum.** **Trailing St. John's Wort.** 1880. On a bank at Hundleby. Observed three or four seasons, but now extinct.
- Malva moschata.** **Musk Mallow.** 1886. Grows freely in a small plantation near the river at Sausthorpe.
- Geranium lucidum.** **Shining Crane's-bill.** 1886. At the root of an old tree in Mavis Enderby Churchyard.
- Erodium cicutarium.** **Hemlock Stork's Bill.** 1892. On a bank on the Hundleby Road, Spilsby, and apparently like specimens on the sand-hills near Gibraltar Point. Observed twelve or fifteen years.
- Oxalis Acetosella.** **Wood Sorrel.** 1882. On a bank at Hundleby. Seen several years.
- Impatiens parviflora.** **Balsam.** 1889. A rare plant, with small yellow flowers, growing on some waste land at East Keal. Possibly an escape from cultivation. A first record.
- Medicago sativa.** **Lucerne.** 1889. On the border of a field at Old Bolingbroke. Most probably an escape.
- Trifolium arvense.** **Hare's-foot Trefoil.** 1890. On a bank at West Keal; also in a field at Hundleby.
- Vicia lathyroides.** **Spring Vetch.** 1879. This rare little plant cropped up for a few seasons in two or three parts of the district, but soon disappeared, so that a special journey of thirty miles to the sea-bank at Winthorpe had to be undertaken to procure a specimen for painting.

- Prunus avium.** Wild Cherry. 1879. In a wood at Well, near Alford.
- Poterium sanguisorba.** Burnet. 1890. On the borders of a small plantation at Firsby, and in a field at Ashby. Observed many years.
- Potentilla fragariastrum.** Strawberry-leaved Cinquefoil. 1891. On a bank at East Keal. Still growing there.
- Potentilla argentea.** Hoary Cinquefoil. 1892. At Halton Holegate.
- Fragaria vesca.** Wood Strawberry. 1879. In Well Woods, near Alford.
- Geum rivale.** Water Avens. 1891. On a bank at Hundleby. Observed 12 or 15 years.
- Oenothera biennis.** Evening Primrose. 1886. Waste ground in Spilsby. A garden escape.
- Circæa lutetiana.** Enchanter's Nightshade. 1888. For two or three seasons flourished as a weed in a garden at Hundleby.
- Myriophyllum spicatum.** Spiked Water Milfoil. 1891. The drains about Skegness.
- Bryonia dioica.** White Bryony. 1879. Observed a few seasons growing in a hedge-row on Bolingbroke Hill.
- Sedum acre.** Biting Stone-crop. 1890. On the sea-bank near the junction of Skegness and Croft parishes.
- Saxifraga tridactylites.** Rue-leaved Saxifrage. 1881. Observed two seasons in Spilsby Churchyard.
- Hydrocotyle vulgaris.** Marsh Penny-wort. 1880. In a drain at Toynton St. Peter's (Fen-side).
- Eryngium maritimum.** Sea Holly. 1889. Grows sparingly on the sea-bank, Chapel St. Leonard's.
- Apium nodiflorum.** Procumbent Marsh-wort. 1890. In small streams at Halton Holegate and other parts of the district. The leaves are sometimes unfortunately mistaken for those of the Water Cress.
- Valeriana dioica.** Small Marsh Valerian. 1880. Seen several years in a small stream at Hundleby.
- Silybum Marianum.** Milk Thistle. 1880. At Mavis Enderby and Bolingbroke. Most likely garden escapes.
- Cnicus eriophorus.** Woolly Headed Thistle. 1892. At Well near Alford.

- Centaurea Calcitrapa.** **Star Thistle.** 1890. Observed two seasons in a meadow at Low Toynton. Absent in 1892. A first record.
- Achillea Ptarmica.** **Sneeze-wort.** 1886. In a disused garden at Hundleby.
- Senecio sylvaticus** var. **auriculatus.** **Viscid Groundsel.** 1890. Large quantities in Halton Fen. First record.
- Aster tripolium.** **Sea Starwort.** 1888. On the sea bank at Addlethorpe, also at Gibraltar Point. Common.
- Petasites fragrans.** **Fragrant Butter-bur.** 1879. Growing quite wild in Spilsby churchyard. Observed at least twelve years.
- Cichorium intybus.** **Chicory.** 1890. In Thorpe Fen.
- Picris echioides.** **Bristly Ox-tongue.** 1890. Two or three places in Hundleby.
- Campanula rapunculoides.** **Creeping Bell Flower.** 1890. Spilsby. Garden escape.
- Campanula Rapunculus.** 1881. Several plants cropped up for one season in a field of clover at Spilsby. A first record.
- Campanula patula.** **Spreading Bell Flower.** 1880. A single specimen was found on Blue Hill Side, Spilsby. A first record.
- Vinca major.** **Greater Periwinkle.** 1881. In a hedge-row at Ashby. Most probably a garden escape.
- Vinca minor.** **Lesser Periwinkle.** 1880. This little plant grows wild in a plantation bordering on the moat which formerly surrounded the old castle at Eresby, Spilsby.
- Blackstonia perfoliata.** **Perfoliate Yellow-wort.** 1886. Two plants were found growing on the chalk near the Mavis Enderby Cross Roads, but only appeared one season.
- Gentiana amarella.** **Autumnal Gentian.** 1890. Found in abundance on the sides of the high road leading from Brinkhill to Dexthorpe.
- Menyanthes trifoliata.** **Buck Bean, or Marsh Trefoil.** 1889. Grows freely in some boggy ground on a hill-side at Langton.
- Polemonium cæruleum.** **Greek Valerian.** 1880. A few plants grew for two seasons in a green lane at Spilsby. Probably garden escapes.
- Calystegia soldanella.** **Sea Bindweed.** 1890. This elegant plant still grows wild on a limited portion of the sea-bank at

Skegness, but, owing to the bank being let off for building purposes, is threatened with obliteration.

Solanum nigrum. **Garden Nightshade.** 1886. A few specimens were found on the sea-bank at Skegness, and more recently at Gibraltar Point.

Lycium barbarum. **Tea Tree?** 1890. There are a few bushes growing apparently quite wild on the sea-bank at Mablethorpe, and at Sausthorpe, which is probably a garden escape.

Datura stramonium. **Thorn Apple.** 1887. An isolated plant grew quite wild amongst the grass in Spilsby churchyard. Other specimens have since cropped up as weeds in various gardens about Spilsby.

Hyoscyamus niger. **Henbane.** 1883. This medicinal plant was at one time quite common on the land side of the sea-bank in the parish of Skegness, but owing to the search after it by herbalists it has become almost extinct. It may, however, still be found at Gibraltar Point.

Verbascum thapsus. **Mullein.** 1879. A sporadic plant on some waste ground near Spilsby. It frequently springs up as a weed in gardens, on old walls, etc., but can scarcely be considered as a native here.

Verbascum blattaria. **Moth Mullein.** 1879. An odd specimen was found in a shrubbery at West Keal, having probably been introduced amongst other seeds.

Antirrhinum majus. **Snapdragon.** 1891. Although frequently found growing on the tops of old walls, etc., it is probably only an escape from cultivation and cannot be claimed as a native.

Pedicularis sylvatica. **Lousewort.** 1890. In a damp field at Hundleby, near the river; also in the parish of Raithby, near Hagg Beck.

Melampyrum pratense. **Yellow Cow-wheat.** 1892. In the parish of Aby, near Alford.

Calamintha Clinopodium. **Wild Basil.** 1880. In the green lane leading south from Raithby Hill side. Still under observation.

Thymus Chamædrys. **Wild Thyme.** 1879. On a chalky bank at South Ormsby. Rare.

Calamintha officinalis. **Calamint.** 1889. On a bank at Lusby, and more recently at Halton Hologate.

Salvia Verbenaca. **Wild Sage.** 1889. On the road side at Halton. One plant was under observation for several years, but has now died out. A first record.

- Salvia pratensis.** **Meadow Clary.** 1888. On a bank at Partney. Garden escape.
- Scutellaria galericulata.** **Skull-cap.** 1879. On the bank of a small stream in Peasgood Lane, Halton; also one specimen in Toynton Fen, a few years later.
- Marrubium vulgare.** **White Horehound.** 1891. Occasionally found on the road-side leading from Skegness to Gibraltar Point.
- Leonurus cardiaca.** **Mother-wort.** 1890. On the sea-bank at Chapel St. Leonard's.
- Lamium purpureum** var. **alba.** **White variety of the Red Dead Nettle.** 1880. This rare little plant grew for many years on a bank on the Hundleby Road, Spilsby, but is, I fear, dying out.
- Lamium maculatum.** **Spotted Dead Nettle.** 1886. On a bank at Claxby. Apparently wild.
- Galeopsis speciosa.** **Yellow Dead Nettle.** 1892. In Welton Wood.
- Teucrium scorodonia.** **Wood Sage.** 1891. On a bank at Hagworthingham.
- Echium vulgare.** **Viper's Bugloss.** 1879. This showy plant appeared several seasons on the borders of a chalk-pit at Langton.
- Lithospermum arvense.** **Gromwell.** 1880. In a corn-field at East Keal. Appeared two or three seasons.
- Myosotis versicolor.** **Parti-coloured Scorpion Grass.** 1879. On the border of a corn-field at Hundleby, and occasionally in other parts of the district.
- Primula caulescens** Bab. **Oxlip.** 1890. In the fields and woodland glades about Gunby. Rare.
- Armeria maritima.** **Thrift.** 1888. On the sand-banks at Sutton-on-Sea.
- Statice genuina** Syme. **Sea Lavender.** 1884. On the muddy flats at the estuary of the Witham, Frieston.
- Plantago** ₂ **maritima.** **Seaside Plantain.** 1892. On the banks ₂ of the tidal portion of the Witham, Boston.
- Utricularia vulgaris.** **Bladderwort.** 1888. In a drain at Skegness.
- Daphne laureola.** **Spurge Laurel.** 1890. Several shrubs were growing quite wild in the woods about Gunby, and were under observation several seasons.

Aristolochia clematitis. Birthwort. 1892. Found in a hedge-row at West Keal. First record.

Ceratophyllum submersum. Hornwort. 1888. In a pond at Skegness.

Orchis latifolia. Marsh Orchis. 1889. In some moist ground amongst sedge and reed at Little Steeping.

Listera ovata. Tway-blade. 1886. In a small plantation at Enderby Cross Roads, also in Well Wood. Somewhat rare.

Epipactis latifolia. Broad-leaved Helleborine. 1890. Welton Wood.

Ornithogalum nutans. Drooping Star of Bethlehem. 1892. On a bank at East Keal, also at Halton Hologate. Most likely garden escapes.

Scilla verna. Vernal Squill. 1879. A few bulbs were found growing together in a small plantation at Eresby, Spilsby, and were brought home and kept under cultivation. None have since been found wild.

Eriophorum angustifolium. Cotton Grass. 1891. This peculiar little plant flourished for several seasons in a boggy piece of ground near the springs at Hundleby, but is now becoming scarce.

NOTES—LEPIDOPTERA.

Sphinx convolvuli in Yorkshire, 1893.—I have heard of three captures of this very fine and exceedingly large moth recently in Yorkshire—viz., two at York and one at Beverley.—W. HEWETT, 12, Howard Street, York, Oct. 23rd, 1893.

Acherontia atropos at Goole.—It has probably been noticed by the entomologists that the caterpillars of the Death's Head Moth are this year very plentiful. Four farmers have brought me specimens.—T. BUNKER.

Death's Head Hawk Moth in Yorkshire, 1893.—Specimens of this moth (*Acherontia atropos*) have been recently taken in the larval, pupal, and imago states at York, Beverley, and Driffeld.—WILLIAM HEWETT, 12, Howard Street, York, October 23rd, 1893.

Varieties of *Argynnis euphrosyne* and *Triphaena pronuba*.—At the October meeting of the Entomological Society of London, Mr. R. South exhibited a curious variety of *Argynnis euphrosyne*, taken in Lancashire, in May 1893, by Mr. T. Baynes; and a *Triphaena pronuba*, the right wings of which were typical, and the left wings resembled the variety *innuba*, caught at sugar in Dovedale, Derbyshire, by Mr. Blagg, in July 1893.—H. GOSS, hon. sec.

Deiopeia pulchella at Beverley.—Whilst looking over the collection of Mr. Bishoprig at Beverley a short time ago, I noticed a very fine specimen of this beautiful moth, which Mr. Bishoprig assured me was taken some 20 years ago in Grave Hill Lane, Beverley, by a youth, and brought alive, and not in the least damaged, to him. Mr. Bishoprig has very obligingly let me have the specimen, which now adorns my collection.—WILLIAM HEWETT, 12, Howard Street, York, October 23rd, 1893.

In Memoriam.

GEORGE ROBERT VINE.

MICROSCOPIC Geology has just recently lost one of its most enthusiastic and ardent supporters—one well known to all readers of 'The Naturalist,' and as well appreciated for his valuable and extensive original contributions to the 'Proceedings of the Yorkshire Geological and Polytechnic Society'; we refer to Mr. G. R. Vine, of Sheffield. A brief notice of his death appeared in our September number, p. 282, but since then we have been enabled to secure the following summary of his life and labours.

Mr. Vine was born in Portsmouth, Oct. 20th, 1825. His parents were poor, but brought up their children in strict conformity with their religious beliefs, and with such a sense of honour and honesty that their son George never wavered from the paths of upright dealing with his fellow men. He found in the National School in Portsmouth a place where the rudiments of education could be obtained for a few pence per week, and for a short time he was a diligent pupil at that institution. Like all school boys, he got into numerous and frequent scrapes, but took full benefit of the advantages there offered, which, at the best, were far inferior to those of the present day. Soon, however, he had to bid 'good-bye' to school and commence daily work, but his desire for knowledge was not to be allayed, and, procuring a Latin and a Greek grammar, he became familiar with the elements of these languages. Poetry and history were his favourite subjects, and his memory for what he had read was truly marvellous; he would often recite lengthy passages from a poet without having seen the book for ten or more years. Mathematics were never attractive to him, but into almost every other branch of learning he dipped more or less extensively. No particular subject, however, had as yet seized upon his mind, though his reading became more and more general, and the consequent breadth of thought and sympathies brought him into contact with many men of ability. With W. J. Linton he was very intimate, and many others well known in the 'forties and fifties' were his almost constant companions. He was connected with the movement for the abolition of the tax on knowledge, with the Chartist cause, with noted foreigners—Kossuth, Mazzini, and others. But, at last, becoming tired of generalities and of the many vagaries so freely discussed at the time, he began to 'settle down.' His business led him about the country considerably until he arrived in Ireland about 1853, as the manager of a corset manufactory in Athlone. Here he was located in the midst of a fine limestone

region and was naturally attracted by the number of fossils obtainable from the neighbouring quarries. Thirty-five or forty years ago, then he commenced that work in Geology which only terminated with his life last month. His collection of Mollusca from Central Ireland is almost unique, and of these specimens he was always very proud. Twenty years ago his attention was directed from general to microscopic Geology. In exchange for a number of theological magazines, he received, from the Rev. W. Howchin, of Morpeth, a series of samples of washings from Carboniferous Limestone quarries in South Scotland and Northumberland. With characteristic enthusiasm he exclaimed, after glancing at the material through a little pocket glass, 'Here is a new world to me!' In an incredibly short time he had become familiar with the commoner forms of Foraminifera, under the generous guidance of Mr. Howchin. The Polyzoa puzzled him, and, upon making a few enquiries, he was told that little was known about this branch of work and that he had better commence investigations for himself. Phillips' Geology of Yorkshire, McCoy's Carboniferous Fossils, and other works were all consulted, but with little success, and so, at last, he commenced in 'Science Gossip,' for 1877, a few papers summarising the state of knowledge on Fossil Polyzoa, and offering a few of his own observations on the matter. Naturally, these were not very exhaustive, but they brought him into correspondence with Mr. John Young, of Glasgow, who helped him with a vast amount of information and an almost exhaustless supply of Polyzoal material. About this time, he became acquainted with Mr. Geo. Shrubsole, of Chester, whose death was also announced in the September 'Naturalist.' An exhaustive study of the *Fenestellidæ* and *Palæocoryne* was carried on between them, a study to which the late Dr. Duncan contributed in no small degree. Mr. Vine was now fairly established in the study of Fossil Polyzoa, and, as the years went by, he was in constant correspondence with such authorities as the Rev. T. Hincks, the late Mr. G. Busk, Dr. Lindstrom, Dr. Pergens, Mr. E. O. Ulrich, Miss E. C. Jelly, Mr. A. W. Waters, and many others, some of whom are still left to mourn the taking of such an one from their intimate circle. His British Association Reports are too well known to need comment, for such work lives to help future students in the intricate pathway. Papers in the Proceedings of the Yorkshire Geological and Polytechnic Society, the Annals and Magazine of Natural History, the Transactions of the Geological Society—in all numbering fifty or sixty—all go to increase that once slender list of works on the Polyzoa. It was not in investigations in the class Polyzoa that Mr. Vine was exclusively engaged. In 1876

he made an important discovery of Macrospores in a coaly seam between vast beds of sandstone in a Sheffield quarry. This drew his attention to the coal plants, and, in a few months, hundreds of coal sections were in his cabinet—slides from Mr. Butterworth, of Oldham, Mr. Spencer, of Halifax, and others; sections prepared by himself and his son, who, at this time, was actively engaged with him at home and in the field. There are few societies of a scientific turn in Sheffield and its neighbourhood that are unable to boast of having had ‘Mr. Vine, the Geologist,’ to give them a lecture on Coal and Coal Plants. The Sheffield Literary and Philosophical Society considered it an honour to have him give them an evening with his slides. Yet another branch occupied the mind of this truly wonderful working man (for such he loved to be styled). Postage stamps, post cards, and its accompanying features fascinated him, and his collection—though, from a monetary point of view, probably not valuable—exhibits that peculiar feature of its author which enabled him to seize on the salient points of a subject almost at a glance. Sea-weeds, zoophytes, and a dozen other things all came in for a share of attention. But it is with pardonable pride that the writer can testify to Mr. Vine’s undying enthusiasm for Sunday School work. Truly he was the man for the little ones, and few families live in Attercliffe to-day that have not, directly or indirectly, been influenced by his humble Christian disposition. So he lived, and so he died, giving directions to his son about his polyzoa two days before he passed away, mentioning Sunday School work the day before he went home, and, wishing his family good-night five minutes before, Mr. Vine passed from the service of earth to the higher service of heaven on Tuesday, August 8th, beloved, honoured, respected, and leaving behind him a name which will surely be found in the long list of ardent, self-taught, and ‘ever-onward’ naturalists.—G.R.V.

NOTES AND NEWS

We regret to learn that the issue of ‘Hardwick’s Science Gossip’ has been (we hope only temporarily) discontinued, on account of the editor’s illness

Mr. F. W. Fierke, 52, Francis Street West, Hull, Hon. Secretary of the Conchological Section of the Y. N. U., desires us to state that he will be pleased to receive any local reports of conchological operations for the current year from the recorders or secretaries of affiliated societies and conchologists of the county. He would also like to draw particular attention to the subject of the investigation of the Yorkshire coast for its mollusca and other marine fauna. The study of the marine zoology of the coast appears to have been much neglected and the means for obtaining information very unsatisfactory. He will be glad to hear from any naturalists who are interested and willing to render assistance in extending the activities of the Union in this direction.

In Memoriam.

GEORGE WILLIAM SHRUBSOLE, F.G.S.

THE late Mr. George William Shrubsole, was born at Faversham, Kent, in 1827, and died at Chester, July 21st, 1893. He received his education at the Queen Elizabeth Grammar School, Faversham, and there showed the first signs of a taste for antiquarian pursuits,



Geo W Shrubsole

by making a collection of early British coins. On leaving school he was apprenticed to a surgeon, and during this time gained the Royal Humane Society's medal for saving the life of a boy who had fallen into deep water. Before he was seventeen he had passed

Naturalist.

the minor examination of the Pharmaceutical Society, being the twenty-fourth to do so. Afterwards he attended the lectures given by the Society about 1846-7, and gained prizes in materia medica and pharmacy, and a certificate in chemistry. He appears to have forsaken the profession of a surgeon for that of a chemist. He was engaged in some of the best West End chemists' establishments, until his health failing through over-study, he accepted an engagement near Dorking, Surrey. It was there that he took up the science of geology, nor can we be surprised, for a more convenient situation to examine the Eocene, Chalk, Upper and Lower Greensand, and the Weald Clay, could scarcely be selected. The fossils of the chalk attracted his principal attention, and of these he made a valuable collection. The care and delicate touch with which he removed the chalk from specimens of *Plagiostoma spinosum*, or worked out the attached spines of a *Cidaris*, well illustrated that power of taking infinite pains which characterised every labour of his life. In 1853 he removed to Chester, and ultimately succeeded to the old-established business of Messrs. John Hope & Sons, Chemists, Market Square. His place of business soon became the recognised centre to which to take all 'finds,' whether archæological or otherwise, in order to obtain his opinion as to their value. In the course of years he was thereby enabled to form a very select collection of Roman and other antiquities, found in Chester and the surrounding neighbourhood. In 1858, the late Mr. Henry J. Bellars, 'honorary secretary and curator of the Chester Natural History Society,' published an 'Illustrated Catalogue of British Land and Freshwater Shells.' In this little work we find frequent references to Mr. G. W. Shrubsole. For instance, at page 15, we read under the heading *Helix aspersa*, 'See also title page, where is represented an unusually elegant specimen, kindly brought with many others from Faversham, Kent, by Mr. G. W. Shrubsole, expressly for this work.' When studying Natural History or Geology he would rise at daybreak in the summer months, to dredge pit, lake, or river for shells, or to visit a quarry for fossils. 'The Chester Natural History Society,' of which Mr. Bellars was honorary secretary and curator in 1858, must have become defunct some time before 1868, as the writer discovered in that year, in a lumber room in the Chester Mechanics' Institute, now the Free Library, a hamper containing an 'omnium gatherum' of fossils, which proved on inquiry to be the residuary estate of that Society, and to which he elected himself residuary legatee. The appointment of the Rev. Charles Kingsley, in 1869, to a canonry of Chester, marks an epoch in the intellectual life of the ancient city. On coming into residence in May 1870, the Canon taught most

successfully a botanical class in the Mechanics' Institute, and in 1871, gave in the 'Old King's School' a series of lectures, which were published afterwards under the title of 'Town Geology.' Mr. Shrubsole was at this time brought into very close contact with Canon Kingsley, as he possessed the only collection of fossils in the city. These he placed unreservedly at the Canon's disposal, for the purpose of illustrating his lectures. Canon Kingsley's discourses were received with enthusiasm, and there gathered around him the whole intellectual life of Chester. We must, also, not omit to mention that the late Mr. Daniel Mackintosh, F.G.S., was then residing in Chester, and followed up Canon Kingsley's labours with a systematic course of lectures upon Geology. In 1871, the Chester Society of Natural Science was founded by Canon Kingsley, and Mr. Shrubsole was elected chairman of the Geological Section. He worthily filled the position for nearly twenty years, and during that period delivered many addresses of great local interest.

In 1873, on the proposition of Canon Kingsley, Mr. Shrubsole was elected a Fellow of the Geological Society. In 1879, Mr. O. A. Shrubsole, and in 1885, Mr. W. H. Shrubsole, the two younger brothers of the deceased, became Fellows of the Geological Society, and, more remarkable still, they have all contributed papers 'which have appeared in the Society's Publications'—an achievement by three brothers, so far as I am aware of, quite unique in the annals of the Geological Society of London. Between 1879 and 1884 Mr. Shrubsole published six papers in the 'Quarterly Journal of the Geological Society,' upon the Palæozoic Polyzoa, of which he had a splendid collection. The late Mr. Vine, with whom he worked out the fossil Polyzoa, only survived him a fortnight. In 1883 Mr. Shrubsole was presented with the Kingsley Memorial Medal of the Chester Natural Science Society, 'for having contributed materially to the promotion and advancement of some branch or department of natural science.' In 1886 he contributed a paper to the Conchological Society, 'On the Erosion of Certain Freshwater Shells.' In October, 1884, Mr. Shrubsole gathered from the Trent Canal at Stone, Staffordshire, twenty specimens of *Planorbis corneus*, a species not known in Cheshire, Stoke being the nearest habitat. These he transferred to his aquarium, supplied with Dee water. 'The shells of the Planorbes,' he observes, 'when I gathered them, were intact and well developed. After some time I noticed that, from some cause or other, they, without exception, developed on their outer surface a series of circular pits or holes, which continued to enlarge till several coalesced, usually along the lines of growth, and often extending across the shell, forming a deep

groove, which penetrated to the lowest shell layer, and continued to widen and spread as time went on. During the time the Planorbes were living in the Trent Canal the shell was entire, while three months' existence in water taken from the River Dee produced the appearance I have described.' He analysed both waters, and in that from the Trent Canal there was a great quantity of lime, while in that from the Dee there was very little, from which he concluded that the carbonic acid in the Dee water dissolved the calcic carbonate of 'which the shelly structure of the mollusca is mainly built up.' He pointed out, however, that shells with a thick epidermis escape this fate. In 1884, he published a complete list of the land and freshwater shells of Chester and District, which appeared in part 3 of the 'Proceedings of the Chester Society of Natural Science.' On antiquarian subjects, he published papers in the proceedings of the 'Historic Society of Lancashire and Cheshire' and in 'Archæologia Cambrensis' from 1890 to 1892. In 1886, Mr. Shrubsole wrote a paper which was published in the Journal of the Archæological Society: 'On the Age of the City Walls of Chester.' This was, doubtless, the outcome of a paper read before the 'Chester Archæological and Historic Society,' entitled 'The City Walls of Chester; is any portion of them Roman?' He contended that no part of the walls was Roman masonry in situ, basing his arguments upon the absence of structural evidence, that the present 'walls' were built by the Romans, also that the perishable nature of the local stone used for that purpose (the Bunter Pebble Beds, sandstone) made it very improbable that the walls of Chester were of Roman construction. The paper was read on December 3rd, 1883, and it is recorded in the Society's Journal that the discussion was adjourned to the 4th of February, 1884, nor did this suffice, for it was again adjourned to February 18th, 1884. The discussion became very animated and soon spread far and wide among Antiquarians, and great interest was aroused in the matter in dispute. A fund was raised to defray the expense of a thorough examination of the structure of the North Wall of the City, which resulted in finding a number of very perfectly preserved inscribed Roman memorial stones which had been built into it. Opinions may vary as to the merits or demerits of the controversy, but not as to the practical results of the investigation of the structure of the North Wall. The 'finds' are now exhibited in the Grosvenor Museum, Chester, and are without doubt the finest collection of inscribed Roman Memorial Stones in the United Kingdom. Mr. Shrubsole was for a number of years honorary curator to the Chester Archæological and Historic Society, and honorary curator to the Chester Society of Natural

Science. In both capacities he greatly enriched the local collections of antiquities and fossils. He also formed a valuable collection of recent local land, freshwater, and marine mollusca, and marine polyzoa. His natural reticence renders it difficult, even to an intimate friend, to do his memory justice, or to record even briefly what he accomplished in a lifetime devoted 'to the search for truth' over so wide and varied fields of observation. Diligent in business as in research, his leisure was but change to occupations in which pleasures never pall. There was no room for ennui where from youth to age each day opened out an ever-widening vista of the arcana of nature which might be won.

He was interred in Chester Cemetery, and gathered round his open grave were many men who had laboured in those researches in which he so much delighted.

The results of the scientific work of his life will be his most enduring monument; let posterity write his epitaph.

WILLIAM SHONE, F.G.S.

UPTON PARK, CHESTER,
September 21st, 1893.

NOTES AND NEWS.

We are indebted to the Rev. J. Magens Mello for a copy of his 'Geology of Derbyshire,' which we are pleased to see has reached a second edition. A general description of the local geology is given; the Carboniferous is fully described, with fossil lists, vertical section of the coal measures, and other details. The Creswell Caves are also described, and a plate of typical specimens found there, along with an explanatory list, is added. The subject is dealt with in a pleasant conversational manner, and anyone possessing only a rudimentary knowledge of geology would soon become familiar with the district by perusal of this excellent hand-book.

A great service is conferred upon naturalists—more particularly in Scotland—by the publication of a 'Naturalists' Map of Scotland,' the joint production of Mr. J. A. Harvie-Brown and Mr. J. G. Bartholomew. We suppose the latter is responsible for the cartographical execution of the work, and Mr. Harvie-Brown for the features which make it distinctively a 'naturalist's' map. The features shown are the cultivated lands (pale green), the patches of woodland (darker green), the moorland, hill-pastures and other uncultivated tracts (purplish-pink or heather-colour) and the deer forests (bluish on the heather-colour). Shading in black shows the land above 1,000, and cross-shading that above 2,000 feet in elevation. The depths of the sea are shown by successively darker shades of blue at intervals of every ten fathoms, and the space between high and low tide is coloured yellow. The portions of freshwater lochs and rivers up which migratory *Salmonidæ* are able to proceed without physical obstruction, are coloured deep blue, and a blue dotted line shows the coast limit within which beam-trawl fishing is prohibited. Red stars indicate the principal lighthouses, and red lines the principal watersheds or 'sky-lines,' showing Dr. Buchanan White's faunal divisions; and a small four-page insert, written by Mr. Harvie-Brown, sets forth the guiding principles and gives notes which the map could not show. The map is very clearly printed, and in spite of all the wealth of detail mentioned above, there is nowhere any difficulty in reading the place-names or making out the topographical features. The authors are to be heartily congratulated on the excellence of their production, and naturalists generally on having such a map to refer to.

A NEW LIST OF BRITISH BEETLES.

Catalogue | of | British Coleoptera | by | D. SHARP, M.A., F.R.S., &c., |
and | W. W. FOWLER, M.A., &c. | London: | L. Reeve & Co. | 1893.

Every Coleopterist will welcome this catalogue, for it supplies a long felt want, and the names on the title-page are a sufficient guarantee that it is 'up-to-date.'

It has long been felt by most, if not all Coleopterists, that a new catalogue was urgently required, for this study has made such enormous advances since the catalogue issued by Fowler and Matthews in 1883, that the latter was comparatively useless.

In the new catalogue no numbers are affixed to the genera, so that should it be found necessary to alter the position of any of them (as, despite the great care which has been used in the present classification, is very probable, owing to the nascent state of this science) it can easily be done.

The alterations, though many, are not only permissible but actually necessary with our improved knowledge. For instance, *Notiophilus* has been raised to the rank of an independent tribe, instead of, as in the old system, forming part of the *Nebriina*; similarly *Oodes*, formerly included under the *Chlaniina*, now is *Oodina*; also *Amara*, hitherto under *Pterostichina*, has, with even more justice, been formed into a tribe, *Amarina*.

The way by which the Geodephaga and the Hydradephaga are connected is much superior to the older way, which was very abrupt. Now it leads by gentle gradations through the *Haliplidæ*, *Brachininæ*, *Dryptina*, and *Lebiina*.

Although a perfect classification has not been arrived at (this indeed is impossible, many of the tribes being closely connected in some directions, yet widely apart in others), yet the system adopted in the book before us shows many advantages over the former ones, and we can but welcome it as more rational than any we have hitherto had.

Several species, the records for which are doubtful (e.g., *Cybister roeseli*, *Hister sinuatus*, etc.), have been removed from the place they have hitherto occupied in our lists, and have been placed at the end under the heading of 'Doubtful Species,' whilst such species as *Carabus auratus* are also collected under the heading of 'Introduced Species,' and the *Stylopidæ* are removed to the end under the title of 'Abnormal Coleoptera.'

Many beetles (perhaps too many?) formerly reckoned as varieties, have been raised to the dignity of species, whilst, in a few cases, the reverse has taken place.

Great care is shown in its compilation, and we can safely say that it is bound to supersede all other catalogues now in use, and the time is far distant when it will be, in its turn, superseded by another.

The classification is, in a great measure, identical with that followed in 'The Coleoptera of the British Islands,' by the Rev. Canon W. W. Fowler, the last two volumes of which we have just received. There is no doubt that these five volumes have done, and are still doing, much to foster the study of Coleoptera, and to draw Entomologists from the well-trodden paths of Lepidoptera to these, comparatively speaking, neglected ones.—W. F. B.

NOTES AND NEWS.

The Liverpool Naturalists' Field Club announce a new edition of the 'Flora of the Liverpool District,' which is to appear under the able editorship of Mr. Robert Brown, if sufficient encouragement be offered, the cost not to exceed five shillings.

A promising feature in English geology is the wide interest taken, during recent years, in the phenomena of glaciation, leading to the undertaking of joint researches by bodies of local geologists. The latest outcome of this enthusiasm is 'The Glacialist's Magazine.' The first number, issued for August, contains the Proceedings of the Glacialists' Association, founded in 1891, an original paper by Mr. A. R. Derryhouse, and some useful reviews of recent glacial literature. Under the editorship of Mr. P. F. Kendall, F.G.S., of the Yorkshire College, the magazine may be expected to have a prosperous career before it.

We have received from our friend Mr. Edward E. Prince, B.A., F.L.S., who has now taken up his duties as Commissioner of Fisheries for the Dominion of Canada, a copy of his Presidential Address to the Andersonian Naturalists' Society of Glasgow. Under the title of 'A Great Scottish Naturalist,' he gives a sketch of the scientific life and career of Prof. W. C. McIntosh, F.R.S., the distinguished occupant of the chair of Natural History at St. Andrews.

We are indebted to Mr. William Moss, of Ashton-under-Lyne, who is doing useful work in microscopical photography, more especially of malacological subjects, for a copy of a paper on the 'Reproductive Organs of *Bulimus acutus*,' reprinted from the Manchester Microscopical Society's Annual Report for 1892, and illustrated by a plate of exceptionally clearly printed figures by Mr. Moss's co-author, Mr. F. Paulden. We regret, however, to see that the original pagination is not preserved in the reprint.

We are pleased to note the announcement of the publication of a work on 'Littondale: Past and Present,' from the pen of the late Archdeacon Boyd; and still more so to learn from the prospectus that its natural history is to receive attention. The 16th chapter is to deal with the 'Flora of Littondale,' written by a valued contributor to the 'Naturalist,' the Rev. W. A. Shuffrey, M.A., who is now Vicar of Arncliffe. A woodcut is to be given of *Cypripedium calceolus*, the plant which Archdeacon Boyd was for a long time so indefatigable and successful in protecting in one of its very few Yorkshire habitats.

We notice in the September number of the 'Midland Naturalist,' at p. 205, that Mr. P. Fox Lee, this year's President of the Botanical Section of the Yorkshire Naturalists' Union, has recently spent a holiday at Long Itchington, in Warwickshire, to good purpose. He has collected a number of most interesting plants there, some quite new to 'The Flora of Warwickshire,' others from new localities, and others again are interesting confirmations of old records. They are published over the signature of Mr. J. E. Bagnall.

DESMID NOTES.

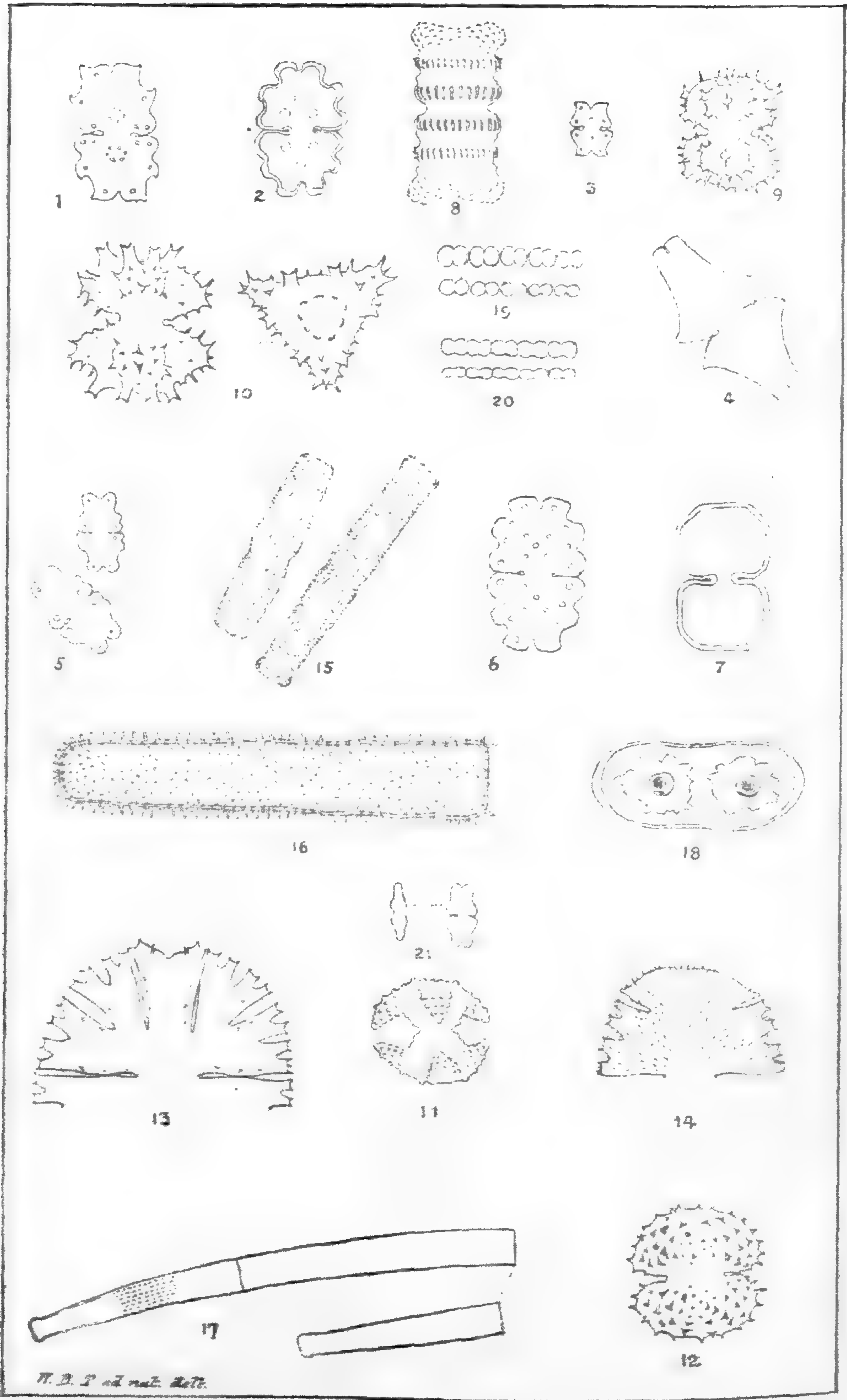
W. BARWELL TURNER, F.C.S., F.R.M.S.,

Leeds.

THE forms of which I append brief descriptions are all British, and as such may be found to possess some interest for our microbotanical friends. They are mostly from collections made by my friend Mr. J. Harbord Lewis, F.L.S., whose gatherings contain other apparently novel Desmidiæ. The collections were made 1885-8, and the little plants mentioned would have been, but for continued illness, long ago described by me. Purely scientific description is deferred.

All the figures, except otherwise stated, are $\times 500$.

1. **Euastrum cambrense** n. sp. A form apparently between *E. erosum* Lund. and *E. binale* (Turp.) Ralfs, from which it differs in the markings, and in the peculiar horn-like upper lateral processes, in front view; the side view also differs. Long. 32, lat. 20, lat. isth. 5, cr. 9.5μ . Dolbadarn, J.H.L.
2. **Euastrum snowdoniense** n. sp. Form with rotundotruncate angles; 3 small ventral inflations; membrane thick. Long. 31, lat. 20, lat. isth. 6.5μ . Snowdon, J.H.L.
3. **Euastrum binale** (Turp.) Ralfs. A tiny form of this species, from the last habitat. Long. 12, lat. 10, isth. 3.5μ .
4. **Euastrum webbianum** f. **major** Turn. (Fr. Alg. Ind. t. xxii., f. 4). This, the larger form, is in an old slide, mounted about 1851 by the late Henry Webb. The basal angles and incurved sides render this very distinct. Long. 58-66; lat. max. 28-32; isth. 9-11 μ . Sutton Park, Birmingham, H.W. Fig. $\times 400$.
5. **Euastrum crassicolle**? Lund., *formæ*. The smaller one seems certainly to appertain to this species, but the apical incision of the larger one differs; the markings, however, and the lateral sinuations, correspond. Long. 18, lat. 11, isth. 3.5μ , and long. 22, lat. 13.5, isth. 5μ respectively. Llyn Padarn, J.H.L.
6. **Euastrum anglicanum** n. sp.? A very puzzling form, apparently close to several species, yet agreeing with none. The lateral view is lanceolate, with subtruncate ends, each semi-cell having a central protuberance. Long. 36, lat. 22, lat. isth. 6μ . Trelleck Common, Monmouth, comm. J.H.L.



H. B. P. ad nat. dett.

7. **Cosmarium gotlandicum** Wittr. v. **cambrense** n. var. Fairly similar to the type, except that it is proportionally much narrower. Long. 35, lat. 22, isth. 6 μ . Near Dolbadarn, J.H.L.
8. **Staurastrum lewisianum** n. sp. This beautiful species is related to *S. capitulum* Bréb. and *S. amœnum* Hilse. It differs from the former in being doubly sinuate at the sides, and from the latter in having two rows of verrucæ. In this form the lower verrucæ are plain, the upper series being minutely dentate or serrate. In vertical view the sides are gently incaved, the apices (3-4) being rounded. Long. 37-42; lat. 18-21, isth. 13-16 μ . Near Llanberis, J. H. Lewis, to whom I dedicate it.
9. **Staurastrum westii** n. sp. A very interesting form, seemingly between *S. griffithsianum* Näg. and *S. diplacanthum* DeNot. Each angle possesses 3 or 4 spines at the upper margin, with 5 short, toothed, thick processes, arranged in quincunx. Long. c. sp. 28-32, s. sp. 25-28; lat. c. sp. 23-26, s. s.p. 18-21; isth. 8-10 μ . This little plant I dedicate to my friend Mr. W. West, F.L.S. Llyn Padarn, J.H.L.
10. **Staurastrum diplacanthum** v. **anglicum** n. v. This var. differs from the Italian type of De Notaris (which I have from Strensall) in having the apices more convex, and crowned with little verrucæ; it has a number of aculei wanting in the type. Long. c. sp. 37-41, s. sp. 27-32; lat. c. sp. 34, s. sp. 28; isth. 9-11 μ . Trelleck, comm. J.H.L.
11. **Staurastrum eboracense** n. sp. Small, with 4 incurved arms, rounded at the ends; each arm with 3 or 4 rows of conical granules; sides sinuate; sinus rounded. It has an apical corona of little verrucæ; remainder, except arms, smooth. Long. 25, lat. 27; lat. isth. 7 μ . Nearest to *S. cerastes* Lund. Strensall Common, W.B.T.
12. **Staurastrum trelleckense** n. sp. Small, semi-cells oval, covered with a few rows of short stout aculei, each spine very dilate at base; angles rounded, each with 6 or 7 short plain aculei. Sinus narrow. Long. c. sp. 33, s. sp. 30; lat. c. sp. 32, s. sp. 28; isth. 14 μ . Trelleck, comm. J.H.L.
13. **Micrasterias papillifera** var. **varvicensis** n. v. A peculiar variety, having the side lobes and lobules incised almost as in *M. crux-melitensis* Ehr. Sutton Park, legit T. Bolton. Fig. \times 250.

14. **Micrasterias truncata** (Corda) Brèb. The peculiar pseudo-spinous form, described in 1840 by Corda as *Cosmarium quadragies-cuspidata*, has turned up from the last habitat, in an old slide of Webb's mounting. The apparent spines are probably only altered mucus. Fig. $\times 250$.
15. **Penium lewisii** n. sp. This little form is a near congener of *P. cylindrus* (Ehr.) Brèb., but differs in its fine granulations, its dilated ends, and its colourless membrane. Long. and lat. 46, 11, and 62, 10 μ . Snowdon, J.H.L.
16. **Docidium hutchinsonii** n. sp. Straight; semi-cells faintly sinuate, ends truncate with broadly rounded angles, basal portion gently dilated, suture not prosilient. Surface covered with small papillæ, 2.5-3 μ long., those at ends 1.7-2 μ long. Frond long. 245-280; lat. bas. 21-26, apic. 17-19.5 μ . Strensall Common, W.B.T. Fig. $\times 400$. Named in honour of the Rev. T. N. Hutchinson, a brilliant scientist and right worthy English gentleman.
17. **Closterium intermedium** var. **sculptum** Racib. forma **eboracense** n. f. A very fine form, with dilated apices, from Strensall. This may prove to be a distinct species. Fig. $\times 200$.
18. **Cylindrocystis roseola** n. sp. This name I have bestowed upon a little form with a membrane yellowish-pink or bright pink in colour; the sides are gently incurved; membrane thickened at apices. Long. and lat. 46 \times 19; 48 \times 20; 52 \times 21 μ . Near Dolbadarn, J.H.L.
19. **Spondylosium monile** n. sp. A tiny form, in front view biglobate, in side view gently contracted in the middle. Measure (about) long. 7, lat. 4, cr. 3 μ .
20. **Spondylosium armillatum** n. sp. A still smaller plant, biscociform, centre gently incavate in front view; side view compressed. Measure (about) long. 6, lat. 3.7, cr. 2.5 μ . This and No. 19 are from Trelleck, comm. J.H.L.
21. **Euastrum exile** n. sp. Minute, with incurved sides, expanded and rounded basal angles, and rounded apices, incisions curvato-cuneate. Sinus narrow. Side view lanceolate, apices rounded. Long. 15, lat. 8, isth. 3, cr. 4 μ . Snowdon. J.H.L.

The following are noteworthy. From Llyn Padarn I have a var. (v. **cambricum** nobis) of **Closterium abruptum** West (Alg. Lake Distr.); this differs from the type in being regularly curved, and in being proportionally shorter and thicker. Long. 114-130, lat. 14-17 μ . North Wales, J.H.L.

Closterium scoticum n. sp. Frond long and narrow, for about $\frac{7}{8}$ ths of the length of nearly the same diameter, tapering a little at the ends, which are expanded into rounded or rotundo-truncate 'knobs.' Suture 1, rarely 2, not central, and often complex, of 4-7 transverse striæ. Membrane smooth, variable, either colourless, or from pale yellow to red-brown in tint. The frond is straight or but slightly curved; very variable in size. Endochrome axillary, with a central line of corpuscles. Long. 260-489, lat. 10-13, lat. apic. 8.5-12.5 μ .

Var. β fusiforme. Almost straight, frond not so even in diameter, decidedly fusiform. Long. 295-415, lat. 12.5-15; lat. apic. 9-11.5 μ .

(This sp. seems nearest to *Cl. biclavatum* Boerg.)

Closterium balmacarense n. sp. Of medium size, slightly and regularly curved, gently attenuate, ends expanded and rotundo-truncate. Suture not central. Membrane smooth and colourless. Endochrome in indistinct fillets, vesicles scattered. Long. 315-322, lat. 20-21, lat. apic. 16 μ .

β **minor**, Long. 260, lat. 16, lat. apic. 12 μ .

Both these Closteria are from Balmacara, Scotland, legit A. W. Wills, 1881. Figures will no doubt be published by Messrs. Roy and Bisset, in the 'Scottish Desmidiæ,' as I have sent them my drawings.

I have also to report the very rare **Penium pandurans** DeNot. from Brant Fell, Bowness. Of this I have previously seen but one specimen, from America, sent to me by my late kindly correspondent, the Rev. Fr. Wolle.

As I find that my friend Mr. West has named an Irish form **Staurastrum curvatum**, I must alter the name of my Indian plant (Ind. Alg., p. 128), which will now bear the name of **Staurastrum involutum**.

NOTES AND NEWS.

Mycologists will be pleased to see a paper from the pen of Mr. Henry T. Soppitt, of Bradford, which appears in the *Journal of Botany* for September. In it he deals with the life history of *Æcidium leucospermum* DC. as observed by him at Steeton and Bolton, in Yorkshire: he finds that this plant is quite distinct from *Puccinia fusca*, which is prevalent in both localities.

We have received from Mr. G. H. Bryan, M.A., a copy of 'The University Correspondent' for Sept. 30th, 1893, containing an interesting paper on 'The Oxen-born Bees of the Ancients,' whereby it appears that from the researches of Baron Osten-Sacken the Common Drone-fly (*Eristalis tenax*) is the animal intended.

THE LEPIDOPTERA OF THE BRITISH ISLANDS.

The Lepidoptera of the British Islands. CHAS. G. BARRETT, F.E.S.
Vol. I. L. Reeve & Co., London.

This volume, which includes the whole of the British Butterflies, is composed of the first ten parts of the great work which Mr. Barrett has undertaken. As twenty-two years have elapsed since the appearance of Newman's 'British Butterflies and Moths,' it goes without saying that such a work as this was absolutely needed; indeed, considering the unparalleled advance which has been made in our favourite science during that time, it ought to have been commenced long ago. The volume completed is eminently satisfactory in most respects, and augurs well for future volumes on the Sphingidæ, Bombyces, Noctuæ, Geometræ, Tortrices, and Tineæ, orders in which the author will be not less at home than he has been among the Rhopalocera. The history of each butterfly, including its local and casual variation, is given in clear and full detail, and represented by coloured plates; but there is an entire and commendable absence of that stiff over-scientific method of dealing with the subject, so dear to many of our entomologists who owe their knowledge more to dry museum specimens and books, than to field work. We are glad too that the author sticks so closely to the old nomenclature, and has not been tempted to adopt the new fangled but altogether unnecessary names now so largely adopted by the younger school of British lepidopterists. As may be taken for granted with one of Messrs. Reeve's publications, the paper is good, and the letterpress large, clear, and neat. The only adverse criticism we feel disposed to indulge in, is on account of the coloured plates: these are in some cases not so good as we should have liked to have seen them, and as we think, such a work warranted us to expect. Somehow, whilst everything else connected with publishing has made rapid advances, the colouring of plates has appeared for many years to be at a standstill. There is the old hard 'printed' appearance, indeed, our artists generally seem no more able now to appreciate the delicate blending and shading of colours which is absolutely necessary to do justice to natural history subjects, than they were twenty years ago. Every lepidopterist who can afford the book, ought certainly to be a subscriber to it.—G. T. P.

NOTES AND NEWS.

A paper by our contributor, the Rev. Hilderic Friend, M.A., F.L.S., entitled 'Studies of British Tree- and Earth-Worms,' which appears in the Linnean Society's Journal, Zoology, No. 153, published on the 15th October, is illustrated by a plate.

ROSA ON THE REVISION OF THE LUMBRICIDI.

REV. HILDERIC FRIEND, F.L.S.,

Author of 'Flowers and Flower-Lore,' Cockermonth.

IT is now exactly a decade since Dr. Daniel Rosa, of Turin, first appeared as the champion of the despised earthworm. Four years after the publication of Darwin's memorable volume on 'Vegetable Mould,' Rosa gave a description of two new species of *Lumbricus* in the pages of 'Atti Acad. Sc. Torino,' vol. xviii. (1882). This was followed two years later (1884) by his pamphlet entitled, 'I Lumbricidi del Piemonte'—a work which at once marked out its author as a most accurate, painstaking, and reliable authority on this hitherto neglected subject. Since then not a year has passed but some further original communication from his pen has enriched the annals of science. This decade of persistent and wide-reaching investigation has at last yielded its ripe fruit, and we now have before us a handsome monograph of upwards of 80 pages folio, devoted to a 'Revisione dei Lumbricidi.' (Torino. Carlo Clausen; Libraio della R. Accademia della Scienze.)

Dr. Rosa, like all the Continental scientists with whom we have had occasion to correspond, is genial and courteous in his bearing, and loses no opportunity to give the credit due to others for the work they have done. His newest work contains a most valuable and elaborate Bibliography, in which we find the names of English, French, German, American, Swedish, Italian, Russian, Australian, and other authors faithfully chronicled in connection with upwards of one hundred articles and monographs, ranging from the days of Linnæus (1767) to the present time. The plan is to give the authors' names alphabetically, with the date of their writings prefixed. Two charts at the end present, in a new and striking form, the relative positions of the girdle and clitellar papillæ (*tubercula pubertatis*) of the genus *Allolobophora*.

Under the title Lumbricidi Rosa groups the following genera: (1) *Lumbricus*, 6 species; (2) *Allolobophora* (including *Dendrobiena*), 49 species; (3) *Allurus*, 6 species; (4) *Criodrillus*, 1 species, or a total of 62 species, besides a few which still remain doubtful. With regard to these latter, one or two suggestions may perhaps be permitted. I believe that Savigny's worm (*E. carneum*, p. 75) is to be referred to the Turgid worm (*Allo. turgida* Eisen), with which it corresponds most accurately. Then we must surely place *Lumbricus teres* Dugès, (p. 76) under *Allolobophora longa* Ude (p. 48). This

is a most variable species, and capable of including some very diverse forms. Hoffmeister was probably correct when he relegated *L. mollis* Dugès, also to this species. Specimens of the Long Worm found in clayey soil in England have exactly the colour and appearance ascribed by Dugès to this species. The Putrid worm (*A. putris* Vej.) again, includes so wide a range of varieties that there can be no difficulty in placing Savigny's Rubid worm (*E. rubidum*, p. 76) among its forms. It is almost absolutely identical with the sub-species *arborea* Eisen. Here, too, Dugès' worm (*L. dubius*, p. 77) will probably find repose at last.

With regard to the difference in size of the seminal vesicles (p. 78) it may be stated that this depends upon the condition of the worm at the time. I have dissected a typical species at different periods of the year and find that though one pair of vesicles may greatly exceed another pair at one time, they will be equal in size, or reversed at another time.

I much regret that the account which I submitted to the Royal Irish Academy many months ago of a new Irish worm (*L. papillosus*, Friend) was not published in time for Dr. Rosa's perusal. He alludes to it on p. 27, on the strength of a letter of mine announcing the discovery, but is unable to place it among the other clearly-defined species. Incidentally, Dr. Rosa points out that the name which I have adopted for this well-marked species has already been appropriated by Dr. F. Müller. I have now examined large numbers of specimens, and find that the Papillose worm is perfectly distinct from every other genuine species of *Lumbricus*.

It is greatly to be regretted that the author of this invaluable memoir was not able to include an index among the contents. The synonyms are now so numerous and perplexing, and the tastes and usages of authors so diverse, that we find it exceedingly difficult to turn to the particular species which we may desire to investigate. If this omission could be remedied by the publication of a folio fly-sheet it would be an immense boon.

I confess to a little surprise as I examine some of the author's latest groupings. In an earlier publication Dr. Rosa gave a most lucid account of the different species of worms which Hoffmeister and others had included under one common name. Now (p. 46) he returns to their earlier position and gives up his own arrangement—an indication of the tendency among all original workers to magnify minute differences when their knowledge is limited, and become conservative with increasing wisdom. It is well, nevertheless, that the variations should be chronicled and emphasised, as they have a most important bearing on the question of specific evolution.

Students will be grateful to the author for his clear and suggestive introduction to the study of species, and we note with pleasure that, out of three systems of notation employed by various writers, he has adhered to that which is in vogue in this country—that, viz., of regarding the peristomium, which is without bristles, as the first body-segment. A brief but ample account is given of all the most important features, both external (as bristles, pores, girdle, peristomium, clitellar papillæ, and colour) and internal (as nephridia, organs of reproduction, circulatory system, etc.); while an interesting paragraph is devoted to the classification of anomalous or abnormal forms—bifurcated tails and heads, dissymmetry of organs, curtailing of segments, transposition of parts, and the like.

As the genus *Criodrilus* is so far unrepresented in our native worm-fauna, we may omit it from present consideration. Under *Allurus* (pp. 69-74) mention should have been made of the well-marked varieties recorded by Eisen and myself. I may also remark that a most interesting species (*Allurus macrurus* Friend) reached me from Ireland last year, which had the girdle apparently on segments 15-22, with papillæ on 20-21 (Nat., January 1893, p. 20). Unfortunately I have never been able to obtain duplicates. It comes near to *A. tetragonurus* Friend (Rosa, p. 74), but is distinguished from that species by the great length of the tail, the shape, and the position of the girdle. Rosa keeps the last-named species for the present distinct from Eisen's *tetragonurus*, though he thinks they may probably be two forms of the same species. I had gone further and treated them as, in all likelihood, identical ('Science Gossip,' 1892).

The fauna of Great Britain now includes five species of *Lumbricus*. There are only seven species at present known to science. Three of these are widely distributed (*rubellus*, *castaneus*, and *herculeus*, following Rosa's order and nomenclature). One is peculiar to Ireland (*L. papillosus* Friend); one to the Alps (*L. melibæus* Rosa); one to Austria (*L. polyphemos* Fitz.); and one is of uncertain distribution. In 1891 I described this species from specimens taken in Yorkshire (not *Essex* as stated by Rosa, p. 26), and named it *L. rubescens*. Rosa has suggested its identity with Savigny's *Enterion festivum*. If this be so, it has been found in France, but not recorded since 1826, so that practically its *present* known distribution is purely British. I have received it along with the four other species from Ireland. Rosa has not omitted to record the observations made in recent years on Hybridity among Worms (p. 27).

The genus *Allolobophora*, as already stated, contains by far the largest number of species. We have upwards of a dozen in Great

Britain (including the *Dendrobænas*), but not one of them appears to be peculiar to these islands. They are exceedingly varied in character, and all future students will owe our author a debt of gratitude for his careful and lucid presentation of facts and details. Dr. Rosa does not err on the side of excessive sub-division. If anything, we might characterise him as cautious without narrowness—tending to a healthful conservatism. We might be disposed to quarrel with him over one or two of the resuscitated names, and the abolishing of certain others which long use had enabled us to roll glibly off our tongues, but there is evidence that the aim of the author has been to do justice to the earliest investigators. We should agree with Michaelsen (p. 39) in making *A. constricta* Rosa, a sub-species of *A. putris*. To avoid confusion, we should prefer to retain Ude's name, *A. longa*, in the place of reviving Savigny's term, *terrestre* (p. 48). It seems very desirable to fix upon names which are expressive of some peculiarity in the animal, and anyone who is familiar with the Long Worm will at once admit the appositeness of Ude's name.

Rosa suggests that *A. cambrica* Friend, may belong to one of the various forms of *A. chlorotica* Savigny. This is probable, but Rosa's lengthy account of the latter species, and my own researches, indicate that much remains to be done in the way of working out the causes and extent of variation in this and some other species. We are glad to see that Levinsen's *Lumbricus eiseni*, which we long ago showed was no true *Lumbricus*, is placed with *Allolobophora* (p. 67). No genuine *Lumbricus* emits a yellow fluid from its dorsal pores as this does.

The bulk of the species included in this genus are not indigenous with us, and, therefore, do not demand fuller notice in these pages. It may be stated that the volume is printed in Italian, in a style which is precise without being too technical, and so arranged that (with the addition of an index) it may be consulted with the greatest ease and readiness.

NOTES AND NEWS.

Mr. W. H. Pearson, of No. 3, The Polygon, Eccles, Lancashire, is preparing—we are glad to notice—a work on the British Hepatics, and is in want of records additional to those published in the London Catalogue of 1881. We trust such of our readers as have it in their power to assist him will do so.

Invaluable to the general student of nature visiting the valley of Wythburn is Mr. Samuel Barber's work, 'Beneath Helvellyn's Shade' (London: Elliot Stock), a copy of which is to hand. The book has no serious scientific pretensions, but we cannot pass it unnoticed, amongst a quantity of kindred literature. The geology and ornithology of the district are shortly dealt with, whilst the book abounds with anecdote and folk-lore, which will not only be of interest but practical value to the lake-land tourist.

In Memoriam.

GEORGE BROOK, F.L.S.

'In illo viro tantum robur et corporis et anima fuit ut, quocunque loco natus esset, fortunam sibi facturus videretur.'—LIVY.

How appropriate these burning words of the historian Livy, originally written of Cato (the greater) are to the subject of this short memoir will be apparent to all who knew him; but to those who knew him intimately and rejoiced in his friendship they commend themselves with much greater force. Whilst deeply regretting his early death in the very prime and vigour of his manhood, we can only reap the barren comfort that much as he had already accomplished, his strength both of mind and body were such as would have carried him forward to even more brilliant conquests in the future. A careful and conscientious observer, an indefatigable worker, possessed of faculties which enabled him to overcome difficulties and to obtain a clear view of any subject upon which his energies were concentrated, he was bound to attain to a higher position in the scientific world, even than that he had reached; and he was endeared to his many friends by his genial disposition, his kindly good nature, and his readiness to communicate the knowledge he possessed to those who consulted him.

Born on the 18th March, 1857, at Huddersfield, George Brook was only thirty-six years of age at the time of his death on the 12th August, 1893. He received his earlier education at Mr. Wood's school at Lindow Grove, Alderley Edge, in Cheshire, and afterwards at Owens College, Manchester, where he studied chemistry under Prof. (now Sir Henry) Roscoe, and geology, botany, etc., under Prof. W. C. Williamson, F.R.S., and others. After completing his education, he joined his father in the prosperous business which he carried on as a worsted coating manufacturer; in this he was engaged for many years, but his natural bent seemed to be more and more towards biological science, which he followed during his leisure hours at this period with no inconsiderable success.

On the 19th June, 1875, he was elected Hon. Sec. of the Huddersfield Naturalists' Society, which post he held until the end of 1876, and during this period he contributed two exceedingly interesting papers to the society on 'The Optical Principles of the Microscope.' He was also Hon. Sec. and afterwards President of the Huddersfield Literary and Scientific Society. In 1876, at the annual meeting on December 2nd, he was elected joint Hon. Sec.

with Mr. W. Denison Roebuck, of the Yorkshire Naturalists' Union, on the occasion of the conversion of the old West Riding Consolidated Naturalists' Society into the wider 'Union,' a post which he held continuously until the end of 1881.

Somewhere about the year 1878 or 1879 the late Mr. Jas. W. Davis, F.L.S., whose lamented death during the third year of his Mayoralty of Halifax occurred only a few weeks before that of Mr. Brook, invited a few scientific friends to his house, and then and there Messrs. Davis, Wm. Cash, F.G.S., George Brook, F.L.S., W. Percy Sladen, F.L.S., C. P. Hobkirk, F.L.S., and John Stubbins formed themselves into a 'close club,' calling themselves the 'Bios,' for the more careful study of biological science and the problems connected with the life of both animals and plants, the meetings being held monthly at each other's houses—a union which was always pleasant, agreeable and instructive, and was only broken up about 1886, owing to several of the members having left the vicinity.

In the early part of 1878 a disease appeared on the Salmon in the rivers Eden, Esk, and others, and Mr. Brook having received a diseased fish, sent for the writer of this memoir to assist him in the investigation of the disease, which was found to be caused by a micro-fungus, *Achlya* (*Saprolegnia*). Mr. Brook read a paper on the subject before the Huddersfield Scientific Club, which was afterwards published in 'The Naturalist,' and a second paper on the same subject he published in the 'Journal of the Royal Society of Edinburgh,' 12th June, 1879, in reply to one published in the same journal by Mr. A. B. Stirling.

About Christmas, 1884, Mr. Brook, having retired from his father's business, received a scientific appointment under the Scottish Fishery Board, where he worked hard upon many subjects connected with it, but chiefly on the development, etc., of food fishes, particularly the herring, on which he published an elaborate paper in the Reports; but owing to disagreements with one of the professors he retired from this post in 1887. During this period (1885) he also received the appointment of Lecturer on Embryology in the Edinburgh University, which he held until his death. Amongst many other papers published by him in various scientific journals special mention must be made of his paper published in the Journal of the Linnean Society of London ('Zoology,' vol. 16, p. 541, 1883), on a new genus (*Sinella*) of *Collembola*, with drawings of the species. His most important works, however, were his memoir in the Reports of the 'Challenger' Expedition on the Antipatharian Corals, September 1879; and the first results of his appointment at the British Museum in the investigation and cataloguing of the corals in that

institution. The first and only volume he lived to complete, a fine quarto illustrated from photographs taken by himself, was on the large genus of the *Madrepora*, which has only just been issued, and will be a lasting memorial of his labours—labours which another hand must now complete. Of his private, well-arranged aquarium, built in his father's grounds for the purpose of fish-culture and the study of the development of the crustacea, space will not permit of more than this passing mention. In Mr. Brook science mourns a master and we a friend.—C. P. H.

NOTE—BOTANY.

Unrecorded Aliens for North Lancashire.—During the summer the undermentioned plants were found at Grange-over-Sands. In no case can I find that they have yet been recorded for this district. The value of 'mustard and cress' is necessarily small, but mustard is on record for Westmorland and Cumberland. Why not cress? They are all of garden origin.

Corydalis lutea (DC.). On a wall, outside a garden, Grange.

Brassica alba (Boiss.). On shore bank. Shore end of Crown Pier, Grange.

Lepidium sativum (L.). Shore end of Crown Pier, Grange. Both garden outcasts.

Carum petroselinum (Benth.). Garden Parsley. Shore bank near Grange, of course escaped; also shore bank near Barrow (1888). A garden outcast. Waste ground, Barrow (1888).

Oenothera biennis (L.). Waste ground in Cart Lane, near Kents Bank. A garden escape.—L. PETTY, Bortree Stile, Ulverston, 13th November, 1893.

NOTES AND NEWS.

The obituary list of geologists is this year a long one. To the names already recorded, we must add that of Mr. Edward Charlesworth, F.G.S., whose death at the age of eighty, severs another link with early days. Mr. Charlesworth, as long ago as 1835, published an important memoir on the 'Craggs' of Suffolk, and since that time numerous papers have appeared from his pen. His connection with the north country dates from 1844, when he succeeded John Phillips as Curator of the Museum at York, a post which he held until 1858. He also had much to do with the arrangement of the museums at Hull and Scarborough, where his bold handwriting is still to be seen on the labels of many specimens, geological and otherwise.

Sheffield has lost a useful worker in Mr. James Batty, of 65, Fawcett Street, Sheffield, who died on October 14th, aged 62 years. He was an excellent type of the working man lepidopterist, and the last surviving practical worker of the old Sheffield Entomologists' Club, which comprised many excellent naturalists thirty and forty years ago. Batty had an excellent knowledge of larvæ, and was the discoverer of the larvæ of *Tapinostola elymi* and *Celena haworthii*. He was a regular correspondent with the late Mr. Wm. Buckler and the Rev. Joseph Hellins, and used to keep them well supplied with material for description. He was also a good micro-lepidopterist, and has left a fairly typical collection of *Tortrices* behind him. Apart from these he kept no collection, having sold his years ago to (we believe) Mr. J. B. Hodgkinson. He then gave up his hobby till a few years ago, when he recommenced to exchange for species he either had not seen before or was not familiarly acquainted with, but two years ago he started his small collection of *Tortrices*. He will be much missed by the writer, as they have been hundreds of excursions together.—A. E. HALL.

NOTES—BIRDS.

Little Gull in Notts.—An immature example of the Little Gull (*Larus minutus*) was shot on the Trent, between Beeston and Nottingham, on Nov. 8th. It is worthy of note that a species which is far from common on our coasts should occur twice within twelve months so far inland. Readers of 'The Naturalist' will remember that a specimen was obtained on the Trent last Christmas.—F. B. WHITLOCK, Beeston, Notts, 16th November, 1893.

Flamborough Bird-notes.—The other day my attention was drawn to immense quantities of sea-birds south of the Headland. Taking my field-glass I could see them for miles, just inside the Smithie Buoy, and to all appearance they must have been feeding on young fish. I could distinctly see several Gannets (*Sula bassana*), Gulls (*Larus*, spp.), and Kittiwakes (*Rissa tridactyla*). The fishermen inform me they have seen immense flocks of Razorbills (*Alca torda*) and Guillemots (*Lomvia troile*) flying along the coast. We are now having some severe weather which has brought several birds from the far north; one poor little bird, the Rotche (*Mergulus alle*), being blown so far as the Danes' Dyke. Mr. D. Atkinson, coming to Flamborough, found it alive and brought it to me. Yesterday I observed several flocks of Snow Buntings (*Plectrophanes nivalis*); I also noticed some very pretty ones in the flocks. Numbers of Larks (*Alda arvensis*), Thrushes (*Turdus musicus*), Blackbirds (*T. merula*), and Woodcocks (*Scolopax rusticola*) have arrived on the Headland. To my great surprise this morning I saw a large flock of Lapland Buntings (*Calcarius lapponicus*) in a stubble field, near to the Flamborough Head Lighthouse.—MATTHEW BAILEY, Flamborough, Nov. 10th, 1893.

Cormorant at Newark-upon-Trent.—Considerable interest has been aroused at Newark by the appearance of a Cormorant (*Phalacrocorax carbo*) on the lofty spire of the parish church. The bird was first observed resting on the vane on Saturday, September 23rd. At the time of writing (just a month later) the bird is still there, enjoying the protection of the townspeople, as every unusual bird-visitor should do. When first observed it was being harassed by the Jackdaws, who look upon the spire as their own special domain. It is said that on its first appearance it rested on its lofty perch for a stretch of eighteen hours without taking food. It now regularly flies, at certain times of the day, to the Trent, near Averham Weir, where it has often been observed feeding. Popular belief credits the story that it is the mate of a second example which was captured alive 21st August, in the gardens of Belvoir Castle. This theory will, however, hardly hold water, when the facts concerning each bird are examined. According to an observer who has studied the Newark example through a telescope, it is unquestionably a bird of the year, and judging from report the Belvoir bird is the same. Newark is also a considerable distance to the north of Belvoir, and the wide difference in the dates almost precludes the possibility of the birds being mates. It is far more probable that both are stragglers from a party or parties of Cormorants which have migrated across country, as is the custom of so many wild fowl (see Birds of Notts and Birds of Derbyshire). Curiously enough this is not the first incident of its kind. Twelve or fourteen years ago a Cormorant, or as I hear from another source a pair, were observed in the same situation, but these only remained a short time. It is very satisfactory to note the number of indignant letters to the local newspapers on the proposition being advanced that the bird should be shot. As one resident by the Trent puts it, 'The man who shoots that Cormorant dare not show his face in Newark.' Whilst writing on the subject of birds on church steeples, the following extract may not be out of place. It is taken from the 'Miscellanies of John Aubrey, F.R.S.,' 2nd edition, published 1721, and is as follows:—'In February, March, and April two Ravens built their nest on the weather-cock of the high steeple in Bakewell, in Derbyshire.' Two Ravens built their nests is curious, and may be a misprint. The circumstance was considered to be an omen of evil.—F. B. WHITLOCK, Beeston, Notts, October 23rd, 1893.

BIRD-NOTES FROM THE HUMBER DISTRICT, SUMMER AND AUTUMN OF 1893.

JOHN CORDEAUX, M.B.O.U.,

Great Cotes, R.S.O., Lincoln.

THE glorious weather of the last summer and autumn, so seldom experienced in our country, and specially distinguished by an unusual amount of sunshine and absence of moisture, has had a marked influence on the movements of migratory birds on the east coast of England. The breeding season in high northern latitudes was earlier and most favourable throughout for the rapid growth and maturing of the young; the southern movement was accelerated and also carried forward under the very best meteorological conditions which scarcely varied for weeks and months. There has been an absence altogether of heavy gales and adverse winds ranging from N.W. to S.E., and instead, more or less anti-cyclonic periods, or gentler breezes have prevailed from southerly or westerly quarters, with complete absence of thick heavy weather and rain storms. In fact, a more favourable time for the passage of birds has seldom occurred, with the result that the migrants have gone direct to their destination, probably moving at a great height, so that the chances of observation were much lessened. Those ornithologists who have had the most frequent opportunities of visiting the coast, agree that there has been, compared with other seasons, everywhere during the autumn, a great dearth of bird life.

Very much the same conditions appear to have prevailed in Heligoland. Mr. Gätke, in a letter dated Sept. 24th, says, 'with two exceptions, the season has been a blank.' On August 10th, he writes, 'My garden swarmed with Pied Flycatchers (*Muscicapa luctuosa*), less *Sylvia phœnicurus*, and some *Sylvia suecica*—all young birds—but that day the wind was E. by S., light, clear, and warm.'

Again, on Sept. 17th, 'There was, early in the morning and forenoon great masses of *Turdus torquatus*, in flights from 100 to 200, as seen never before; *T. musicus* less and coming before great many *Falco nisus*, young; and during the night great many *Charadrius*, *Himantopus*, *Numenius*, and other "long-legs," passing the lighthouse. The wind was first O.N.O., in the morning some rain, evening clear, N.N.W. faint.'

I am not aware of any corresponding movement on the east coast, and it is curious that we have neither seen or heard of a Ring Ouzel this autumn, either on the Yorkshire or Lincolnshire side.

In compiling the following notes I have frequently been indebted to Mr. G. H. Caton Haigh, of Grainsby Hall, and Mr. H. B. Hewetson, of Leeds, and to both these gentlemen I wish to express my best thanks.

Cuculus canorus. Cuckow. June 25th and 26th. On these days I saw at least twenty between Easington and Kilnsea, evidently on the move south. All were adults and I think, with one exception, males. At least they all appeared the same size except one which was decidedly less. On August 12th, several young Cuckows were seen in the same locality.

Numenius phæopus. Whimbrel. July 26th. First recognised on migration by their familiar call passing from N.E. to S.W., and at a great height. On 31st were very numerous on the Lincolnshire coast.

Squatarola helvetica. Grey Plover. July 31st. A flock on the Lincolnshire coast. August 31st. Several on the muds near the Spurn with black breasts.

Calidris arenaria. Sanderling. August 12th. Two in partial summer plumage shot by Mr. H. R. Hewetson at the Spurn. 21st. A few seen on the shore near Tetney Haven.

Totanus canescens. Greenshank. August 12th. First seen on Yorkshire coast. October 15th. I saw a few on the mud-flats in Kilnsea Bay, recognised by their flight and cry.

Tringa canutus. Knot. August 31st. Sixteen young birds shot from flocks near the Spurn by Mr. H. R. Hewetson. On September 29th, Mr. H. B. Hewetson observed an immense flight of Knot and Dunlin flying due south and extending like a bent bow from Kilnsea Lane to considerably seaward of the sea-beacon on the coast, probably a mile from flank to flank, followed for an hour by succeeding flocks of many hundreds. The flight was very low, only just clearing the telegraph-wire. On October 15th I saw enormous flocks on the muds near Kilnsea with Dunlin and other shore-birds.

Eudromias morinellus. Dotterel. Sept. 4th. One in autumn plumage shot by Mr. G. H. Caton Haigh, near Donna Nook. This is the only example I have seen killed on the coast at this season and in the very different plumage which is assumed after the autumn moult.

Puffinus major. Greater Shearwater. September 9th. Mr. Hewetson saw a large Shearwater within thirty yards of the shore, when waiting to go on board his boat at the Spurn.

- Sterna dougalli. Roseate Tern.** September 9th. One was seen by Mr. Hewetson and others when boating near the Spurn.
- Tringa subarquata. Curlew Sandpiper.** September 9th. Shot near the Spurn.
- Sterna fluviatilis and S. macrura. Common and Arctic Terns.** In August and September, reported as extraordinarily abundant at sea, and also along the coast. I am told a professional tern-slayer shot six hundred near the Spurn ; the wings only were taken to sell to the plume dealers. It was a brutal and cruel slaughter of harmless and charming creatures to pander to a senseless fashion. Unfortunately, for the future of the Sea-Swallow, all appeals made to the fair sex on the subject, although not without effect, have so far been ineffectual to prevent this unnecessary cruelty and wrong.
- Anthus obscurus. Rock Pipit.** September 21st. First seen on migration on Lincolnshire coast. On October 26th, I saw a few on the Tetney and North Cotes fitties ; these appeared to be referable to the *A. rupestris* of Professor Nilsson, the Common Rock Pipit of the Lincolnshire coast in the autumn.
- Anthus pratensis. Meadow Pipit.** September 23rd. Many were noticed by Mr. Haigh along the same coast.
- Xema sabini. Sabine's Gull.** September 25th. Mr. Haigh shot a young bird of the year close to the mouth of Saltfleet Haven. It fell into the sea, but shortly reviving, flew out so far that it was not recoverable.
- Totanus fuscus. Dusky Redshank.** September 17th. One was shot by Stubbs of Tetney. This bird was kindly presented to me by Mr. Haigh. It is presumably a bird of the year, and much mottled with dusky brown on the under surface of the body.
- Machetes pugnax. Reeve.** September 20th. One which I saw was shot near Cleethorpes, about this date.
- Charadrius pluvialis. Golden Plover.** September 20th. First young birds obtained. October 26th. Some larger flights about this date. September 28th. The first really noticeable 'rush' of migrants on the East Coast was observed by Mr. Haigh on this day. Wind strong, S., thick and wet. Lapwings at short intervals all day very high, direction W. Larks only in morning flying low to S.W. Blue Tits (*Parus caeruleus*) in very large numbers, 50 to 100 having been seen by him in the great hedge-row in North Cotes hundred-acre.

This grand old shelter fence is conspicuous at a great distance, and is the first cover that small birds make for when coming to land across the North Cotes 'fitties' from the sea. Both the Blue Tit and Great Tit have been very common in our coast districts, also a few Coal Tits.

At Kilnsea, on the Yorkshire side, a few 'Pilots' (*Regulus cristatus*) were seen on the 28th, and the first Woodcock (*Scolopax rusticula*) at the Spurn. On the 27th Mr. Haigh noticed great flights of Greenfinches (*Ligurinus chloris*) on the stubbles at Tetney, and on the 29th the country about Easington and Kilnsea swarmed with them. Mr. Hewetson writes:—'I never saw such a migration of Green Linnets in my life, there were thousands in the lanes and in our garden, and during the time I was watching them there was an enormous immigration overhead, from the sea—countless clouds—one cloud at a great elevation; mere specks—and a lower stratum, quite distinct from the others, coming in at the same time, flying S.W. I have only seen locusts come in such quantities. I believe to a bird they were all Green Linnets.' On October 14th, when shooting at Easington, I found the fields still swarming with Greenfinches.

Passer domesticus and **P. montanus.** **House and Tree Sparrows.** October 9th. Mr. Haigh noticed large numbers of both on coast, the former much the most numerous.

Corvus corone and **C. frugilegus.** **Carrion Crow** and **Rook.** October 9th. Mr. Haigh writes:—'These have been coming in for some days, but no Grey Crows yet.' I have recently had an opportunity of examining a large series of bird skins collected during many years by Mr. Haigh from the Lincolnshire coast, and I think there is yet much interesting work to be done in determining the races or varieties of some of our common birds in respect to their migratory movements and geographical distribution. Thus, for instance, we certainly have two Starlings, our common English bird and that purple-headed eastern race which comes in October and leaves again in the late spring. Then there are two Rock Pipits, the British and the Scandinavian forms. So also at least two races of Snow-Buntings, a larger and a smaller, and apparently a light and a dark variety, a colouration which is distinguishable alike in old and young. Larks also vary much in size, and those which arrive on the east coast in autumn are uniformly darker on the upper parts and less rufous than our local race. Immigrant Rooks also appear to me to have a more purple gloss on their plumage than home birds. Other instances also might be cited.

All these variations, however, require to be carefully worked out, and conclusions can only be arrived at after an examination of a large series of skins.

Turdus iliacus. Redwing. October 9th. A few have come in.

Phalaropus hyperboreus. Red-necked Phalarope. Oct. 4th. One, which I subsequently saw, was shot by Stubbs at Tetney.

Scolopax rusticula. Woodcock. Oct. 10th. One seen in Grainsby Park. October 18th, Wind N., first flight; Skeffling, Kilnsea, Holmpton were the chief places, but not Spurn. A few also on Lincolnshire coast.

Turdus pilaris. Fieldfare. October 15th. I saw a few on the wing between Easington and Kilnsea.

Plectrophanes nivalis. Snow Bunting. October 15th. One on the beach near Kilnsea. On the 16th, Mr. Hewetson noticed a flock of ten when crossing the Humber in his boat. November 1st to 4th, 'rush,' great many flocks.

Corvus cornix. Grey Crow. October 18th, first seen; several near Kilnsea; great many first week in November.

Emberiza miliaria. Common Bunting. October 14th. When shooting to-day, I put up some large flocks from stubbles at Easington.

Sturnus vulgaris. Starling. October 26th. Out of about twenty shot from migratory flocks on the coast or in the fields near Tetney and North Cotes and Grainthorpe, all except one were the purple-headed or eastern form.

Motacilla alba. White Wagtail. October 28th. I saw one on a manure-heap near Grimsby, the only one I have ever seen so late in the year.

Phalaropus fulicarius. Grey Phalarope. October 31st. One was killed by Stubbs at Tetney.

Tringa striata. Purple Sandpiper. October 31st. One shot at Grainthorpe on the Lincolnshire coast.

Corvus frugilegus. Rook. November 2nd. Mr. Haigh writes 'There has been the heaviest rush of Rooks I can remember. This morning on going to the coast I found them coming in from the East in large straggling flocks without intermission. Till about 3 p.m. the flocks were never out of sight, but from 3 p.m. till dusk they were not so frequent. Stubbs told me they had been coming in the same numbers during the two previous days. Peewits were also travelling in very large numbers.'

To-day, November 3rd, the flight was nearly over, but Rooks were still arriving in small straggling flocks, or odd birds; of Pewits I only saw two or three larger flocks.' I saw immense flocks of Rooks here on the stubbles on the evening of November 1st.

Geese. Nov. 3rd. Mr. Haigh saw a flock of about 200 come in from the east of Grainthorpe. November 7th. At Great Cotes, about eighty in flock flying east at daybreak.

Eagle. A large Eagle has been repeatedly seen near the Coast-guard Station at Grainthorpe during the latter part of October and early in November; it is probably a young Sea-Eagle.

Linota linaria. Mealy Redpoll. November 6th. A few at Easington. One shot from a small flock. Some Woodcock same day. Wind N.

In a subsequent letter, under date of November 9th, Mr. Gätke says, 'Ornithological news there is next to nothing to be told from here. The weather has been too bad, stormy winds from the west and north-west, with deluges of rain varied by showers of hail. But all this October through there have been almost daily some Woodcocks and Blackbirds. These two have an inherent defiance of wind and weather, for they turn up under so adverse aspects that nobody knowing anything about the ways of birds would fancy a feather was stirring. For instance, on the first of this month, when it blew hard from the west and north-west, accompanied by rain, two hundred Woodcock and perhaps double that number of Blackbirds were captured. Robins, Leaf-warblers, and Accentors and the like, scarcely any during the autumn. . . . *Alauda alpestris* scarcely any. . . . There remains scarcely any doubt that a young bird of *Larus rossi* was shot and lost in the sea too rough to follow in a small boat; described as like a young Kittiwake, but smaller, having a round tail, a very small black bill, and reddish feet. It was wounded and staggered away out seaward into rough water. The men in the boat are all intimately acquainted with all the gulls visiting our waters; still the evidence is scarcely sufficient.'

NOTE—LEPIDOPTERA.

Agrotis saucia, etc., at Huddersfield.—During the present autumn four specimens of *Agrotis saucia* and some fourteen *Agrotis aprilina* have been taken here at 'sugar' by Messrs. S. L. Mosley, F. Netherwood, and myself. It must be thirty years since either of these species was recorded as occurring in this district. We have also taken a few *Dasyptilia templi* in the stone quarries at Denby Dale.—GEO. T. PORRITT, Huddersfield, Nov. 17th, 1893.

THE YORKSHIRE BOULDER COMMITTEE AND ITS SEVENTH YEAR'S WORK.

THOMAS TATE, F.G.S.,

Leeds; Hon. Sec. to the Yorkshire Boulder Committee.

THE special sub-committees organised or projected, as intimated in our last report, have prosecuted their labours, in the main, satisfactorily during the past year.

The annual meeting of the Yorkshire Naturalists' Union being held last November at Huddersfield, advantage was taken thereof to start a sub-committee for exhaustively exploring the Holme and Colne Valleys, two tributaries of the Calder. After a very careful examination of the river-gravels, the Hon. Sec., Mr. Joseph Field, reports that they 'have failed to find an Erratic boulder in the whole distance from the water-shed of the Pennine to the junction with the Calder,' a conclusion entirely in harmony with the observations of several members of this Committee.

The investigation of the main valley of the Calder is being prosecuted with vigour. The reports from the river-head and its upper waters have not yet come in. Mr. James Spencer, Halifax, has supplied a valuable series of personally collected specimens from Luddendenfoot, Sowerby Bridge, North Dean, Elland and Mirfield, for identification by this Committee.

Exceptionally good work has been done by Mr. John Burton, Horbury, who, patiently following the excavations necessary for the Horbury new sewage works, has collected several hundreds of typical boulders foreign to this water-shed.

A valuable report from Mr. Chas. W. Fennell, Wakefield, covering the valley from Thornes to Stanley, completes our account of the Yorkshire Calder, nearly to its junction with the Aire. The specimens accompanying this report are all of small size, having been obtained mainly along the banks of the river, no excavations being available.

The distribution of these erratics is probably tolerably regular from Elland to Wakefield Heath. Wherever excavations have been executed, as at Dewsbury and Horbury, the gravel-bed has been found to be continuous. The drainage and the gas-works, at the former place, proved this bed over an area exceeding two square miles, and in the more recent work at Horbury it has been followed for over half a mile. At its deepest point the trench passed through six feet of sub-soil and river sand, resting upon 20 feet of gravel.

the bottom not reached. Its thickness at Savile Town and Heathfield varied from 15 to 20 feet without finding a base. At all these stations, towards the bottom of the gravel bed, a fair proportion of the Buttermere granophyres ranged up to 18 or 20 inches in length. About Elland the gravels do not exceed 9 or 10 feet in thickness, while local sinkings west of Wakefield Heath, about Thornes, have shown the gravel-bed to have a thickness of from 34 to 40 feet.

Excluding local rocks, the Buttermere granophyres are by far the most important; next come the Eskdale granites, after these rank the Borrowdale andesitic ashes and lavas, the devitrified phylolites associated with the Coniston limestone being also well in evidence.

For the present, we may say, not a single example of any Scottish rock, nor of Carrock Fell, Eycott Hill, Skiddaw, Threlkeld, Armboth, or Shap rock has been identified in the Calder Valley.

An efficient exploration of Holderness, with especial reference to the distribution of Scandinavian erratics, was initiated last February under a strong local sub-committee, with Mr. J. W. Stather, F.G.S., Hull, as Honorary Secretary. The district west of Hull and the Chalk area of the East Riding will also receive careful attention from this sub-committee. The work will be systematically carried out, and it is not intended that any report should be presented until at least some well-defined area is completed.

The work of the Map sub-committee is not so advanced as was anticipated. By the removal of their mapper, Mr. Chas. Brownridge, A.M.Inst.C.E., F.G.S., to Birkenhead, delay became inevitable. Fortunately the benefit of his experience is retained, as he continues his connection with this committee. However, a section of our new Yorkshire Glacial Map, embracing one horizontal strip from Todmorden to Spurn Point, was submitted to the glacialists attending the Nottingham meeting, showing how we propose to execute the mapping of the Yorkshire erratics.

The Committee are now giving their attention to the area around Barnsley, upon which they hope to report next year, and they will welcome any local help that is available.

During the past year the following erratics have been recorded:—

Reported by the Rev. WM. R. BELL, Laithkirk Vicarage, Middleton-in-Teesdale.

All in the Parish of Laithkirk.

SHAP GRANITE BOULDERS.		Altitude. Feet.
1. Near Primitive Methodist Chapel, Lunedale	...	1,200
2. Near Brookscar, in the bed of the Lune	... ..	800
3. Near Laithkirk, in the bed of the Lune	... ..	700
4. In Vicarage garden, from same place	... ..	700
5. Broken up for ornamental stones, from same place		700

Naturalist

6.	North side of field near Lunebridge	...	...	600
7.	Do.	do.	...	600
8.	West Pasture Road S., Quarry Hill	...	...	900

WHINSTONE BOULDERS.

9.	Near Greengates, in Lune	...	...	900
10.	In Middle Park, in Lune	...	...	750
11.	Near East Field, south side of highway	..	...	600

Remarks:—

No. 1. By highway, north side, embedded in the ground; of considerable size; smooth; no striæ.

No. 2. In the middle of Lune, large cubical block two or three tons weight probably; corners worn off; no striæ.

No. 3. In the Lune below the church, 3 ft. 6 in. × 1 ft. 7 in. × 2 ft. 6 in., smooth; corners worn off.

No. 4. Formerly near No. 3, good size, cubical, corners worn off.

No. 5. Formerly near No. 3, fragments still existing.

No. 6. In Hind's field near Lunebridge, north side, embedded in ground, now in the Park, Middleton-in-Teesdale; nearly two tons on weighing machine.

No. 7. Close to No. 6, larger, blasted by the farmer, fragments still to be seen.

No. 8. Very similar to No. 2; blasted a short time ago and fragments now used as copings of the 'Rose and Crown' garden wall.

Nos. 9 and 10 are very large blocks embedded in the soil, and No. 11 is a cubical mass with angles rounded off.

A few small Shap boulders may be seen in private grounds.

P.S.—It is a very curious fact that all the Shap Granite boulders found in this district occur only in the valley of the Lune.

In the adjoining valley of the Tees none is to be seen. Supposing the boulders to have been borne in on ice from Shap Fell, the mountainous ridge forming the boundary between Yorkshire and Westmorland (Lune Street), at least 1,532 feet high, would have to be crossed, and as the mountain ridge between Lune Valley and Tees Valley, in its eastern part, does not rise near so high, it might be supposed that a few boulders would find their way here and there, into Teesdale.

Reported by Mr. W. GREGSON, F.G.S., Baldersby.

- 1.—On Stubbings' Farm, Tanfield, three miles from Masham, a Shap Granite boulder, 32 × 28 × 39 in., embedded about 24 inches; sub-angular, longest axis S.E. about parallel with the river Ure; striation, top S.E. and N.W.; about 300 ft. altitude; resting on Millstone Grit.

2.—On Lindrick Farm, two miles west of Ripon, a Shap Granite boulder, triangular, angles rounded, $18 \times 13 \times 9$ in.; no striæ; resting on Lower Yellow Limestone (Permian); altitude 300.

N.B.—This boulder has been removed to the Museum of the Naturalists' Society, Ripon.

3.—Mortham Tower, Rokeby: altitude 450 feet. Basalt, 20 in. in diameter, rounded; resting on Carboniferous Limestone.

4.—Egglestone Abbey, Startforth: altitude 500 feet. Shap Granite, $24 \times 15 \times 15$ in.; subangular; resting on Carboniferous Limestone.

5.—Startforth, near Barnard Castle, on right bank of Tees. Shap Granite, $50 \times 36 \times 30$ in.; subangular; resting on Carboniferous Limestone. Shap Granite, $48 \times 30 \times 27$ in.; subangular; resting on Carboniferous Limestone. Shap Granite, diameter 12 in.; rounded; resting on Carboniferous Limestone. Shap Granite, $32 \times 28 \times 26$ in.; subangular; resting on Carboniferous Limestone. Shap Granite, $30 \times 12 \times 10$ in.; subangular; resting on Carboniferous Limestone. Grey Granite, $36 \times 18 \times 12$ in.; subangular; resting on Carboniferous Limestone.

6.—Pickhill, near Thirsk: altitude 100 feet. Basalt, $18 \times 15 \times 14$ in.; subangular; resting on drift overlying Keuper Sandstone.

7.—Sinderby, near Thirsk: altitude about 90 feet. Carboniferous Limestone, $30 \times 20 \times 18$ in.; subangular; on Keuper Sandstone; striæ, N.E. and S.W., in the direction of its long axis.

Reported by Mr. T. CARTER MITCHELL, F.S.A., Topcliffe, Thirsk.

At Topcliffe, near Thirsk, in the bed of the river Swale, close to its left bank and about 150 yards above the church, under the 'clump,' above water only when the river is very low, a boulder of Millstone Grit, 4 ft. 2 in. \times 4 ft. \times 2 ft. 2 in. above the mud, but probably deeply embedded; sub-angular; no striæ; resting on Lower Lias; altitude 50 feet.

Reported by Mr. J. EDMUND CLARK, B.A., B.Sc., York.

In the bed of the 'Water Lane' stream, about 100 yards up the stream, from the road at Clifton, near York; a Millstone Grit boulder, 4 ft. 1 in. \times 2 ft. 6 in. \times 1 ft. 6 in.; sub-angular; long axis W.N.W. and E.S.E.; no striæ.

Reported by Mr. J. W. STATHER, F.G.S., Hull.

Between Atwick and Skipsea, about one mile south of the latter, a Dolerite boulder, $4 \times 3 \times 5$ ft., partly embedded in the purple boulder clay at the foot of the cliff, at about high water (spring tide) mark; longest axis E. and W.; flat and level at the top, with well marked striations in direction of longest axis; sub-angular, its smaller or bluntly pointed end is towards W.S.W.

Reported by Mr. JAMES SPENCER, Akroyden, Halifax.

Collected from bed or banks of the Calder; all small and fairly rounded pebbles, under 3 inches.

LUDDENDENFOOT.

- 1 Borrowdale porphyrite.
- 1 Borrowdale andesite.

SOWERBY BRIDGE.

- 1 Borrowdale andesite.

NORTH DEAN.

- | | |
|-------------------------|--------------------------|
| 1 Borrowdale andesite. | 1 Buttermere granophyre. |
| 1 Borrowdale ash. | 1 Eskdale granite. |
| 2 Ennerdale granophyre. | |

ELLAND.

- | | |
|----------------------------|---------------------------------|
| 1 Muncaster grey granite. | 1 Borrowdale vesicular lava. |
| 3 Eskdale granite. | 1 Borrowdale ash. |
| 3 Buttermere granophyre. | 4 Borrowdale andesites. |
| 4 Ennerdale granophyre. | 1 Borrowdale granitiferous ash. |
| 1 Eskdale eurite. | 1 Yewdale volcanic breccia. |
| 1 Pink felsite (rhyolite). | 1 Mountain limestone. |

MIRFIELD:

Buttermere coarse granophyre.

Reported by Mr. JOHN BURTON, Horbury, Wakefield.

Mr. John Burton, Horbury, submitted for identification the following specimens collected during the excavations in carrying out the local drainage scheme:—

- 88 Eskdale granite, from size of walnut to $9 \times 6 \times 6$ ".
- *22 Buttermere granophyre, do. do.
- 24 Borrowdale andesitic lavas and ashes, up to 4".
- 11 Pink felsite (rhyolite), up to 7".
- 4 Yewdale volcanic breccia, up to 8".

* It is well to repeat here that the rock most commonly found was the Buttermere granophyre, and not the Eskdale granite, as might be inferred from the above analysis.

- 1 Red quartzite (Trias?), $2\frac{1}{2}$ ".
- 4 Vein quartz, up to 6".
- 1 Black chert, $3 \times 2 \times 2$ ".

Many of the larger stones have merely lost their angles, but the smaller ones are fairly well rounded.

Reported by Mr. CHARLES W. FENNELL, Surveyor, Wakefield.

(Accompanied by a Sketch Plan, to which letters refer.)

THORNES.—Near junction of canal with river, along the side of Miss Jubbs' 32-acre field (A).

- 1 Buttermere granophyre, $6 \times 5 \times 4$ " subangular.
- 5 Eskdale granite, long axes, 2 to 5" rounded.
- 1 Pink felsite (rhyolite), $2 \times 2 \times 1$ " subangular.
- 1 Black felsite do. $1 \times 1 \times 1$ " triangular.

THORNES.—Gravel-pit in Miss Jubbs' 32-acre field (B).

- 13 Eskdale granite, $\frac{1}{2}$ " to $2\frac{1}{2}$ " rounded.
- 1 Muncaster grey granite, $3 \times 1\frac{1}{2} \times 1\frac{1}{2}$ " subangular.
- 3 Buttermere granophyre, all under 1" rounded.
- 1 Grey felsite (rhyolite), $2\frac{1}{2} \times 2 \times 1\frac{1}{2}$ " triangular.
- 1 Borrowdale ash, $1\frac{1}{2} \times 1\frac{1}{2} \times 1$ " triangular.
- 1 Vein quartz, $1\frac{1}{2} \times 1\frac{1}{2} \times 1$ " rounded.

WAKEFIELD.—East of L. & Y.R. viaduct to Goole, near old rifle range (C).

- 2 Eskdale granite, $1 \times \frac{3}{4} \times \frac{1}{4}$ " rounded.
- 1 Borrowdale ash, $4 \times 1 \times \frac{1}{2}$ " subangular.

WAKEFIELD.—In bend of river near where canal starts, opposite Kirkthorpe (D).

- 3 Eskdale granite, all under $1\frac{1}{2}$ " rounded.
- 1 Grey felsite (rhyolite), $1 \times \frac{1}{2} \times \frac{1}{2}$ " subangular.

KIRKTHORPE.—In river dredgings near dam (E).

- 3 Eskdale granite, $2 \times 1\frac{1}{2} \times 1\frac{1}{2}$ " rounded.
- 1 Buttermere granophyre, $3\frac{1}{2} \times 3\frac{1}{2} \times 2\frac{1}{2}$ " subangular.
- 2 Do. do. $2 \times 1\frac{1}{4} \times 1\frac{1}{4}$ " rounded.
- 1 Pink Felsite (rhyolite), $3 \times 3 \times 2$ " subangular.

STANLEY: near damstake at Kirkthorpe: Stanley side of river (E ×).

- 3 Eskdale granite, $3\frac{1}{2}$, $2\frac{1}{2}$ and $1\frac{1}{2}$ " long axes.
- 1 Borrowdale ash, $1\frac{1}{2}$ " triangular.
- 1 Yewdale breccia, $2 \times 1\frac{1}{2} \times 1$ " subangular.
- 1 Dark felsite (rhyolite), $3 \times 2 \times 1\frac{1}{2}$ " rounded.

SMALLEY BIGHT (F)

- 1 Pink felsite (rhyolite), $3\frac{1}{2} \times 3\frac{1}{2} \times 3$ " rounded.

FURTHER ADDITIONS TO THE DONCASTER LIST OF LEPIDOPTERA.

H. H. CORBETT, M.R.C.S.,

Doncaster.

THE following list of Lepidoptera comprises such species as I have found in the vicinity of Doncaster since 1890, not being recorded for Doncaster in 'Yorkshire Lepidoptera' (Porritt), nor included in my 'Additions to the Doncaster Lepidoptera,' (vide 'Naturalist,' Jan. 1891). Four species, all in the genus *Lithocolletis*, are new to the county. These are indicated by an asterisk (*).

Several others are either very rare or have been overlooked in the locality, e.g., *Chærocampa porcellus*, *Macroglossa fuciformis*, *Zeuzera æsculi*, and *Xanthia aurago*.

Colias edusa. Common in August 1892. This species was also taken here in 1877, when var. *Helice* was taken here.

Vanessa io. Edlington Wood, Jan. 10th, 1893.

Satyrus tithonus. Wheatley Wood, Sept. 1891.

Smerinthus ocellatus. Larva at Doncaster, Sept. 1891.

Chærocampa porcellus. Wheatley Wood, at sugar, May 1893.

Macroglossa fuciformis. Larva at Wheatley Wood, 1893.

Zeuzera æsculi. Balby, 1891.

Nudaria senex. Wheatley Wood, 1892.

Lithosia mesomella. Wheatley Wood, June 1892.

Lithosia complanula. Common at Wheatley Wood.

Eupisteria heparata. Common in Wheatley Wood.

Cidaria silaceata. Common in Wheatley Wood.

Hydræcia nictitans. Abundant on *Senecio* at Edlington Wood, Sept. 1892.

Neuria saponariæ. Common at sugar in Wheatley Wood, June 1892.

Miana furuncula. Wheatley Wood, July 1893.

Caradrina alsines. Wheatley Wood, July 1893.

Agrotis suffusa. Wheatley Wood, Sept. 1893.

Triphæna interjecta. Wheatley Wood, July 1893.

Xanthia aurago. Wheatley Wood, at sugar, Sept. 1893.

Euperia fulvago. Common at sugar in Wheatley Wood, July 1893.

Abrostola triplasia. Wheatley Wood, 1892.

- Herminia tarsipennalis.** Common in Wheatley Wood.
- Pyralis glaucinalis.** Wheatley, 1892.
- Botys fuscalis.** Dodworth Wood, May 1893.
- Scoparia muralis.** Wheatley, 1892.
- Scoparia coarctalis.** Abundant at Wheatley.
- Ephestia elutella.** Balby, 1892.
- Clepsis rusticana.** Wheatley Wood.
- Pœdisca ophthalmicana.** Conisborough, 1892.
- Semasia wœberana.** Common at Doncaster.
- Argyrolepia cnicana.** Common in Wheatley Wood.
- Psyche roboricolella.** Larvæ common in Wheatley Wood.
- Scardia emortuella.** Wheatley and Edlington Woods.
- Tinea fuscipunctella.** Doncaster.
- Micropteryx purpurella.** Abundant on birches in Wheatley Wood.
- Micropteryx semipurpurella.** Abundant on birches in Wheatley Wood.
- Micropteryx unimaculella.** Abundant on birches in Wheatley Wood.
- Micropteryx sparmanella.** Wheatley Wood.
- Swammerdamia griseo-capitella.** Common among birches in Wheatley Wood.
- Harpipteryx scabrella.** At sugar in Wheatley Wood, Aug. 1893.
- Depressaria assimilella.** Common in Wheatley Wood.
- Depressaria alstræmeriella.** Common among *Conium* at Wheatley.
- Depressaria angelicella.** Common in Wheatley Wood.
- Gelechia populella.** Common in Wheatley Wood.
- Gelechia fraternella.** Abundant but very local at Wheatley.
- Gelechia obsoletella.** Bred from *Chenopodium* at Doncaster, 1893.
- Gelechia hermannella.** Abundant but very local at Doncaster, 1893.
- Argyresthia ephippella.** Abundant in Wheatley Wood, 1893.
- Ornix guttella.** Common generally.
- Coleophora albicostella.** Common about *Ulex*, at Cantley.
- Asychna terminella.** Larvæ abundant in Wheatley Wood.
- Elachista luticomella.** Common at Doncaster.
- Elachista cerussella.** Common, but local about Doncaster.

- Tischeria angusticolella*. Larvæ at Dodworth, 1893.
Lithocolletis lautella. Armthorpe Shaw, 1892.
 **Lithocolletis torminella*. Wadworth, 1893.
 **Lithocolletis cerasicolella*. Wheatley Wood, 1892.
 **Lithocolletis aucupariella*. Wheatley Wood, 1892.
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Bucculatrix cristatella. Doncaster, 1893.
Bohemannia quadrimaculella. Wheatley Wood, July 1893.

NOTES AND NEWS.

The Journal of Botany for August (pp. 241-243) has an appreciative paper 'In Memory of Robert Holland' (who was born on the 2nd August, 1829, and died on the 16th July, 1893) from the pen of his co-writer on English plant-names, Mr. James Britten.

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A prominent feature of the last anniversary meeting of the Linnean Society of London was the presentation to the distinguished Tyneside botanist, Dr. Daniel Oliver, F.R.S., of the Royal Gardens at Kew, of the Linnean Gold Medal, awarded to him in recognition of the sterling character and wide range of his botanical work.

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A Monograph of the Coraciidæ, or the family of the Rollers, from the pen of Mr. Henry E. Dresser, F.L.S., F.Z.S., the distinguished Yorkshire ornithologist, who is well known to fame as the author of so monumental a work as the 'Birds of Europe,' is announced for speedy publication. It gives a complete account, with 27 hand-coloured plates, of all the known species of these richly-plumaged birds. The size is imperial 4to. uniform in every respect with the 'Monograph of the Meropidæ.'

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All who remember the record of *Scorpena dactyloptera* in our March number will learn with interest that an excellent paper on it as a British fish, by Mr. W. Eagle Clarke, appears in the Proceedings of the Edinburgh Royal Physical Society (1892-3, pp. 94-101), illustrated by a capital plate of the Yorkshire example. The species had only been figured once before, and not too accurately, by its original describer, F. E. Delaroche, in the 'Annales du Musée d'Histoire Naturelle' (1809). Mr. Clarke has increased the value of his article by appending a full bibliography of references to it and its close congeners. The Yorkshire example is now in the Edinburgh Museum, though we must confess that it seems a pity that it is not in some Yorkshire museum.

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Leeds geologists have to mourn the decease of Mr. William Cheetham, in whom the Leeds Geological Association sustains a great loss. He was one of its founders, its president from 1882 to 1884, and vice-president and member of council down to his death last September. He was also an active member of the council of the Yorkshire Geological and Polytechnic Society, and a Fellow of the Geological Society of London. As a geologist he was familiar with the best English scenery, and also with the finest parts of Norway, the Rhine, the Black Forest, and Switzerland. He was a native of Calverley, near Leeds, and throughout his life resident at Horsforth, where for more than forty years he was engaged in the cloth manufacture. An earnest friend of education throughout his life, he was one of the founders of the Calverley Mechanics' Institute. At his death he had reached to more than the 'three score years and ten' of human life.

MARINE BIOLOGY IN THE ISLE OF MAN.

Sixth Annual Report of the Liverpool Marine Biology Committee and their Biological Station at Port Erin, Isle of Man. By W. A. HERDMAN, D.Sc., F.R.S.

A very interesting account is given in this report of the opening of the new station of this energetic Committee; and the initial work that has been there done gives good augury of an enlarged sphere of well-applied usefulness. The station is admirably situated for marine biological work, and might be very advantageously utilised by the Sea Fisheries Committee for establishing a fish-hatchery. Details of several dredging expeditions are given in the report with very satisfactory results, and there is a long list of workers who have used the station during the year. The Committee proposes to establish a marine aquarium, and to engage the services of a resident curator to devote some attention to the preservation of marine specimens for museum and laboratory purposes. Many museums will no doubt be glad of the opportunity thus offered of obtaining desirable objects for their collections, and they would do well to make their wants known to Prof. Herdman. It is satisfactory to know that the Puffin Island Station previously occupied by this Committee will still be continued, it having been taken by the University College of North Wales.—E. HOWARTH.

NOTES AND NEWS.

In Messrs. Britten & Boulger's recently-published 'Index to British and Irish Botanists,' p. 81, Mrs. Hey, of Leeds, is mentioned as the author of 'The Moral of Flowers.' She also published in the same format 'The Spirit of the Woods,' 1837.

In the recently issued list of the Geological Society of London, the numbers of Fellows resident in the northern counties stand as follows:—Yorkshire 72, Lancashire 56, Cheshire 21, Derbyshire 18, Durham 15, Nottinghamshire 12, Northumberland and Cumberland each 10, Westmorland and Lincolnshire each 4, Isle of Man 1.

The last published list of members of the British Ornithologists' Union, which is appended to the October number of the 'Ibis,' affords an interesting study of the distribution of ornithologists in the north of England, which is singularly even. Out of the small and select total number of 245 M.B.O.U.'s there are 33 resident in the northern counties, as follows:—One in the Isle of Man, four in Cumberland, two in Westmorland with Furness, one in West Lancashire, two in South Lancashire, three in Cheshire, none in Derbyshire, three in Nottinghamshire, none in South and two in North Lincolnshire, one in South-East Yorkshire, two in South-West Yorkshire, three in Mid-West Yorkshire, one in North-West Yorkshire, two in North-East Yorkshire, three in Durham, one in Northumberland, and two in Cheviotland. In addition to these there are north-countrymen resident abroad as follows:—Four in London, four in the rest of England, two in Scotland, and one each in Ireland, Canada, and India.

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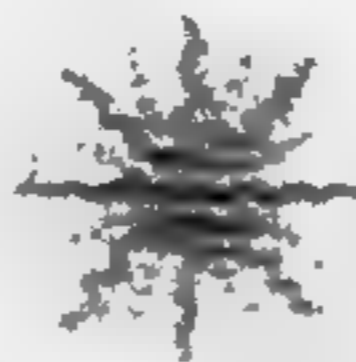
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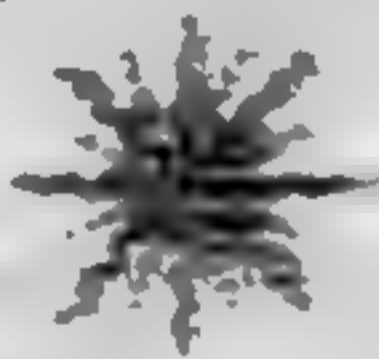
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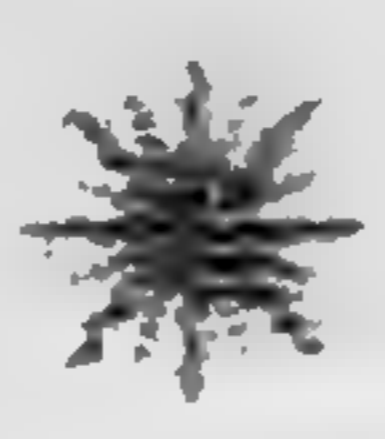
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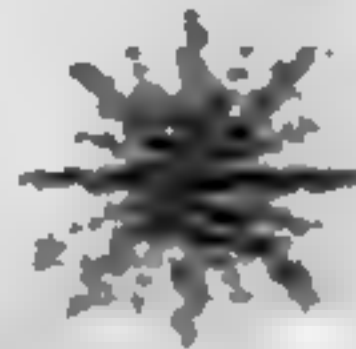
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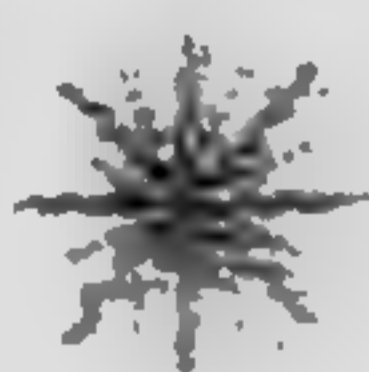
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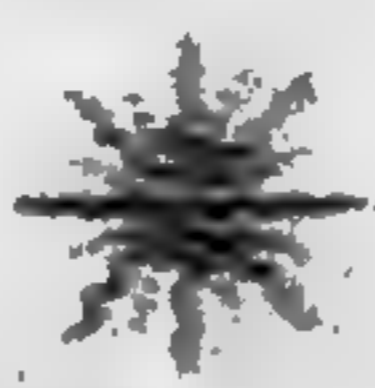
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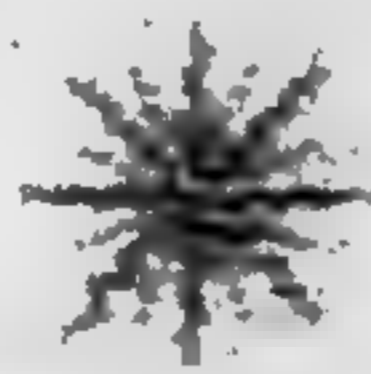
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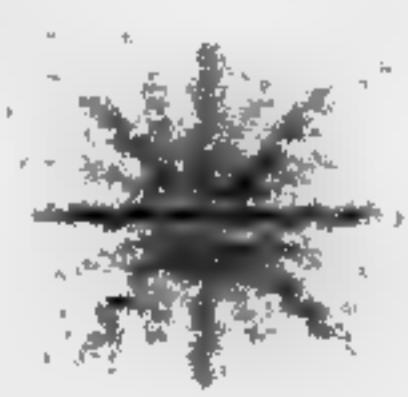
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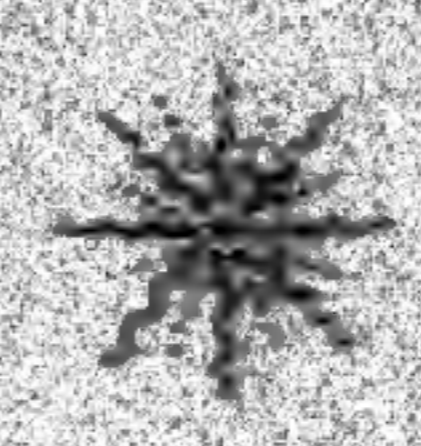
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